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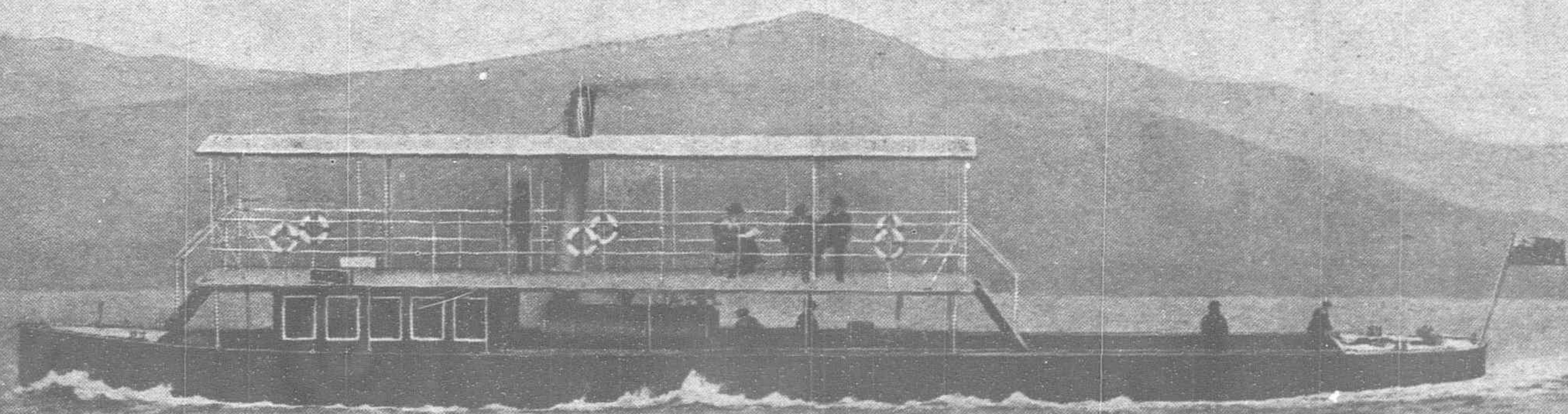
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SHANGHAI, PEKING, TOKYO AND MANILA

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No. 5

Foreign Exchange in China

How Foreign Currency is Changed into the Several Chinese Circulating Media

By G. PASSERI

The article written by Mr. Passeri and appearing in the *Ports of the Orient* issue of the "Far Eastern Review" entitled "Practical Notes on the Financing of the Import and Export Trade with China" has evidently awakened very deep interest as we have received from various quarters numerous requests to have some of the points touched upon in the article more fully explained. While Mr. Passeri cannot satisfy all the various demands in this issue, he has given the preference to those coming from Chinese educational institutions and has authorised us to publish the following notes on foreign exchange, originally written by him in the course of an exhaustive essay on "Currency Exchange and Banking." These notes will answer many of the enquiries received by us and will form very interesting reading to all. Those particularly interested on the subject will find a Chinese translation of the following notes in the *Bankers' Magazine*, the official organ of the Chinese Bankers' Association.—The Editor.

Very little has been written on the subject of the foreign exchange relations of China with the other countries and practically nothing on the actual transactions that are the consequence thereof. This is possibly caused by the fact that the inside knowledge of those transactions is not so widely spread even among foreigners out here and that few, very few indeed, possess the necessary qualifications to speak on a subject that constitutes without a doubt the most difficult problem of Banking in the Far East. Those who do possess this knowledge, apart from considerations of suitableness, recognize also that it would serve no purpose to analyse and explain how the different operations are performed, as the attainment of the necessary skill is absolutely dependent on actual practice, even for those who have performed similar operations at home. In dealing with the subject, therefore, I will not attempt to go into technicalities, but I will be satisfied if I can help you to form a rudimentary idea of the complicated mechanism.

Exchange Quotations.—In order to lay the proper foundations of our subject let us find out first of all what is actually meant by "exchange quotations." Many of you, I am sure, who have had trade relations with this country, have at times wondered what your agent out here meant by telling you that he could not put through a certain deal on account of the "exchange;" and you could not understand it, as it is something that you never had anything to do with. I do not mean you all, but the vast majority whose trade relations have so far been with gold countries.

Now, "exchange quotations" means the expression of the ratio between any one given currency out here and any one given currency abroad. That I hope is easy enough to understand, but you must remember that this ratio has to express the comparative value of two different metals, silver here and gold abroad; and not only that, but, as in the case of the internal exchange, has to express those elements that can be easily reckoned (charges, dues, interest, etc.) and those that can only be ascertained by comparison (demand and supply).

Basis.—In the case of the internal exchange we found the basis of our calculations in the intrinsic value of the different mediums of exchange, while in the case of the international exchange the only basis that we can depend upon in normal times, is the so-called "London silver price" (New York?) or in other words the price in shillings and pence that we would have to pay for one ounce of silver in London.

London parity of silver.—As I have explained that after all a Tael is only a weight of silver, to which a notation of fineness is added, I am sure you will begin to see that if you have the gold price for a certain weight of silver in London (ounce troy) of a known fineness ($\frac{222}{240}$) it will not be difficult going through

a few calculations to find how many shillings and pence it would cost you (including of course all charges, interests, etc., that can be easily ascertained) to bring enough silver out here, 998 fine, to make up the weight and fineness of any given Tael. The only question is to select one of the many Taels, but that has been done long ago, the unit selected being the Shanghai Tael, from which, as we shall see later on, all the other quotations for the other treaty ports are derived. But we are confronted here with another peculiarity, that we shall, however, overcome quite easily. You know that the silver coming out to China in bars is weighed on the Canton scale, 579.84 grains troy, and it is sold at the average price of Shanghai Taels currency 111.20 per every Canton Taels 100 weight.

Charges.—The charges in normal times (we shall examine present conditions later) fluctuate between .80 and 1 per cent, made up as follows:—

| | |
|---------------|-----------------|
| Freight about | $\frac{1}{2}\%$ |
| Insurance | $\frac{1}{6}\%$ |
| Brokerage | $\frac{1}{3}\%$ |
| Landing, etc. | $\frac{1}{4}\%$ |

And for the sake of our calculations we shall take .90 per cent.

We have so far put down all the elements required to find how many shillings and pence will be equal to one Shanghai Tael; the only element that is missing is the London silver price, but as this is liable to change, we shall leave it out of our calculations for the present and shall be satisfied to find the "constant" that, multiplied by the London silver price, will give us the price in shillings and pence of the Shanghai Tael.

Formula for "Constant."—Now try to follow me: How many shillings and pence will be equivalent to one Shanghai Tael (Shanghai Tls. 100 plus charges Tls. .90, Shanghai Tls. 100.90), if Shanghai Tls. 111.20 are equal 100 Canton Taels weight and if we know that 1 Canton Tael weight is 579.84 grains troy. But the London quotation is for standard silver $\frac{222}{240}$ while the silver coming out to China is $17\frac{1}{2}$ better or $\frac{239\frac{1}{2}}{240}$, while one ounce of 480 grains troy is sold at the "London silver price." Here is the formula:—

?=1 Shanghai Tael;
 Shanghai Taels 100=100.90 plus charges;
 Shanghai Taels 111.20=100 Canton Taels;
 Canton Tael 1=579.84 grains troy;
 Grains 222 Standard silver=239½ grains of 17½ troy; betterness;
 1 ounce of 480 grains=London silver price.

$$\frac{100.90 \times 579.84 \times 239\frac{1}{2}}{111.20 \times 222 \times 480} = 1.182$$
 "constant"

That multiplied by the London silver price will give you the equivalent in Shanghai Taels. Now, supposing the London silver price to be what it is actually to-day, of 49½ pence per ounce, if you multiply this by the constant 1.182 you find pence 58.50, but as it is customary to express the rate in shillings and pence out here we would have to say 4 shillings 10½ pence, or in short 4/10½. This is what is generally called the "parity" of silver, not yet modified by the elements of demand and supply.

The London silver price is telegraphed daily to the various foreign banks out here, but it is an accepted custom for the Hongkong & Shanghai Banking Corporation to give out their rates at 9.30 in the morning, after receipt of the London telegram, to the Exchange Brokers' Association, who publishes them immediately on a slip that is sent round to all other banks, merchants, etc., in the place.

Exchange Bulletin.—For your information I will give you hereunder a specimen of one of these slips that we shall analyse in detail:

RATES OF EXCHANGE

| | | |
|---|--------------|-------------|
| SHANGHAI, Saturday, 19th October, 1918. | | |
| 1—BAR SILVER | Spot..... | 49½ = 4/10½ |
| 2—DO. | Forward..... | no market |
| 3—MEX. DOLLARS..... | | 73.825 |
| 4—NATIVE INTEREST | | 16 |

H. & S. B. C. Opening quotations 9.30 a.m.

5—Banks' Selling Rates

| | | |
|------------------|--------------|------|
| 6—LONDON..... | T/T..... | 5/1 |
| 7—,, | Demand | 5/1½ |
| 8—,, | 4 m/s | 5/1½ |
| 9—INDIA | T/T..... | 338½ |
| 10—FRANCE | T/T..... | 666 |
| 11—AMERICA | T/T..... | 121 |
| 12—HONGKONG..... | T/T..... | 68 |
| 13—JAPAN..... | T/T..... | 44½ |
| 14—BATAVIA..... | T/T..... | 277 |
| 15—STRAITS | T/T..... | 46 |

16—Banks' Buying Rates

| | | |
|------------------|-------------------|------|
| 17—LONDON..... | 4 m/s Credits... | 5/3½ |
| 18—,, | 4 m/s Docts ... | 5/3½ |
| 19—,, | 6 m/s Credits.. | 5/4 |
| 20—,, | 6 m/s Docts | |
| 21—FRANCE | 4 m/s | 697 |
| 22—AMERICA | 4 m/s L/c..... | 124½ |
| 23—,, | Docs | 125½ |

EXCHANGE BROKERS' ASSOCIATION, SHANGHAI

For the sake of convenience I have placed on the lefthand side progressive numbers, so that I can refer to them in the course of these explanations, but I wish to point out that these numbers do not appear on the original bulletin.

(1) BAR SILVER SPOT 49½-4/10½.

As we have just made these calculations ourselves in the preceding page, we know exactly that the above is the so-called "parity of silver" and it means that silver being 49½ d. per ounce troy in London, the price in Shanghai per Shanghai Tael would be 4/10½ sterling.

(2) BAR SILVER FORWARD—NO MARKET.

This is self-explanatory and while in normal times a special quotation is given for "forward" silver, delivery in two months' time, at present no such quotation is given.

(3) MEX. DOLLARS 73.825.

This has nothing to do with the foreign exchange quotations, but is the market rate of Mexican Dollars into Shanghai Taels, precisely Shanghai Taels 73.825 per Mex. \$100.

(4) NATIVE INTEREST 16.

This also has nothing to do with foreign exchange, but it means that the native Banks pay interest at the rate of Tls. 16 per Taels 1,000 per day (5.84% per annum). This rate is a sure indication of the state of the local money market.

(5) BANKS' SELLING RATES.

This means the rates at which the Bank will sell gold.

(6) LONDON T/T 5/1.

This means that for one Shanghai Tael the Bank will sell 5 shillings and 1d. by telegraph payable in London the same day. This quotation is taken from the above parity (1) and in normal times it should be at a little variance with the same, the small difference then present being due to demand and supply, but as the war has created everywhere abnormal conditions we have not escaped its consequences out here.

First of all, in working the parity we have not taken in consideration the interest for the time that it would take for the silver to come out to China and if we reckon it on the basis generally adopted of 3 per cent. per month, we shall have to add to the parity ½d.

New York Parity of Silver.—Furthermore, at present silver cannot be shipped from London, the only place where we can still get it, in limited quantities, being the New York market, where the price of silver has been fixed at Gold \$1.01½ per troy ounce. Therefore, while the Banks are apparently still reckoning their parity on the basis of the London silver price, in practice this parity is worked on the basis of New York silver price—New York, I repeat, being the only market where silver can be eventually obtained.

I do not believe it will be out of place to explain here how this parity is reckoned. We have all the necessary elements already, the only ones that we require in addition being:

- I. The price of silver per 100 ounces troy=Gold \$1.01½.
- II. The cross rate between New York and London—that is now 4.76½
- III. The charges, etc., from New York to Shanghai, about 2 per cent.

Formula Through London.—And the following would be the formula that requires no explanation.

? Pence=Tael 1 :

Shanghai Taels 111.20=Taels 100 Canton weight;

Canton Taels 82.7815=Troy ounces 100;

Troy ounces 100=101½ New York silver price—plus 2% charges, etc.

Ounce troy 1=Gold \$1;

Gold \$4.76½=240d

$$\frac{103\frac{1}{2} \times 240}{111.20 \times 82.7815 \times 4.76\frac{1}{2}} = d. 56.63.$$

But as pence 56.63 are equivalent to 4/8½ the proper notation would be 4/8½ this being the parity worked on the New York silver price.

This parity is 1½d. lower than the London silver parity of 4/10½ and this is due to the fact that the latter includes charges, interest, etc. from New York to London, that are heavier than from New York to Shanghai.

Formula London-New York.—It might be interesting for you to derive from the above result the parity in gold dollars per 100 Taels Shanghai and you would have then to apply the following formula:

? Dollars Gold = 1 Shanghai Taels;
Shanghai Tael 1 = 4/8 $\frac{1}{2}$ (56.63d.);
240d. = 4.76 $\frac{1}{2}$

$$\frac{56.63 \times 4.76\frac{1}{2}}{240} = \text{Gold } \$112.43.$$

That is to say, that Tls. 100 Shanghai should be worth according to the parity Gold \$112.43 plus interest.

Formula Direct New York.—But as the subject of the gold dollar is naturally very interesting to you I will give you hereunder another formula, based on elements with which you are already fully acquainted—and that will give the same result as the one you have just obtained but without passing through London:

? Gold Dollars = 100 Shanghai Taels;
Shanghai Taels 111.20 = 100 Canton Taels weight;
Canton Taels 82.7815 = 100 ounce troy;
Ounces troy 100 = 101 $\frac{1}{2}$ Gold Dollars plus 2% charges;

$$\frac{103\frac{1}{2}}{111.20 \times 82.7815} = \text{Gold Dollars } 112.43.$$

Parity and Exchange Quotations.—We shall return to the original subject now. We have seen that the actual parity, in Shanghai Taels, for silver coming out from the United States, is 4/8 $\frac{1}{2}$ to which we shall add $\frac{1}{2}$ d. for interest bringing it to 4/8 $\frac{3}{4}$, while the price quoted here per Tael was 5/1 on the 19th October, or 4 $\frac{1}{4}$ d. above the parity, corresponding to about 7 per cent. Incidentally, I will mention that from the 17th September to the end of the month, with the parity of silver at 4/8 $\frac{3}{4}$, official rates were quoted at 5/6 and 5/7 was freely done during that period. Now 5/7 is 10 $\frac{1}{4}$ d. above parity, or something between 16 or 17 per cent.

Abnormal Conditions.—We must say that this is an abnormal state of affairs, created by various circumstances that you will excuse me from mentioning, as I would probably come to the conclusion that the regrettable position of this market has no reason to exist and that rates have been during the past few months, and are controlled now, by other factors besides those justified by demand and supply. I may mention incidentally that it is my opinion, shared by everybody who has really at heart the welfare of this market, that there is too much gambling in exchange allowed to the Chinese, a procedure that is not always to the advantage of the real trading interest of the place. It is not my intention to enter into controversial matters in dealing with this subject and I therefore pass on to consider what are the actual conditions in normal times.

Normal Conditions.—In normal times rates here follow very closely the parity of silver, the demand and supply modifying them only to the extent of about 2d. either way, but even then the market is not so healthy as it should be, as the gambling coefficients are always present and will cause movements in the rates that have no relation with the actual needs of the trade. An ideal condition would be to have rates based on the actual silver parity and not influenced by the gambling elements that disturb the international relations of this country and modified only by the tendency as brought about by the same.

(7) LONDON DEMAND 5/1 $\frac{1}{4}$.

The $\frac{1}{4}$ d. difference between the T/T rate and demand rate is due to the fact that owing to the difficulty of communication existing at the present time it takes longer at present to cash a demand draft at home than it did in pre-war times when the difference was only $\frac{1}{2}$ d., representing the interest of one month's time.

(8) LONDON 4 MONTHS 5/1 $\frac{1}{2}$.

The same remarks as above applies here only for the longer period of four months.

(9) INDIA T/T 338 $\frac{3}{4}$.

The rates on India, France, America, Japan, and Batavia are all based on the London T/T rate of 5/1 and the respective cross rates between India and London, between France and London, between New York and London, etc., cross rates that are telegraphed out to Shanghai from London at any important change or changes that in normal times occur very seldom.

This particular quotation for India of 338 $\frac{3}{4}$ means that with the T/T rate on London being 5/1 the equivalent of Shanghai Tls. 100 would be Rps. 338 $\frac{3}{4}$ with a cross rate of 18d. per Rupee.

Here is the formula:

? Rupees = 1 Tael;
Tael 1 = 61d.;
18d. = 1 Rupee.

$$\frac{61}{18} = \text{Rupees } 338\frac{3}{4}.$$

(10) FRANCE T/T 666.

As we have said already in regard to paragraph 9 this quotation is obtained by applying the Paris/London cross rate of Francs 26.20 equivalent to £1. For your guidance I give you the necessary formula:

? Francs = 100 Taels;
Tael 1 = 5/1 (= 61d.);
d 240 = Francs 26.20;
 $\frac{61 \times 26.20}{240} = \text{Francs } 666.$

(11) AMERICA T/T 121.

This is also obtained as above by applying the New York-London cross rate of Gold \$4.76 $\frac{1}{2}$ equivalent to £1.

? Pence = 100 Taels;
Tael 1 = 5/1 (= 61d.);
240d. = Gold \$4.76 $\frac{1}{2}$;
 $\frac{61 \times 4.76\frac{1}{2}}{240} = \text{Gold } \$121.$

(12) HONGKONG T/T 68.

This rate has nothing to do with the Gold exchange quotations and it simply indicates that 100 Hongkong Dollars are equivalent to Shanghai Taels 68

(13) JAPAN T/T 44 $\frac{7}{8}$.
This is obtained by applying the cross rate Japan-London of 2/3 $\frac{3}{8}$.
? Taels = Yen 100;
1 Yen = 2/3 $\frac{3}{8}$ (= 27 $\frac{3}{8}$ d.);
61d. = 1 Tael;
 $\frac{27\frac{3}{8}}{60} = 44\frac{7}{8}$.

(14) BATAVIA T/T 277.

This is obtained by applying the cross rate of Florins 10.90 equivalent to £1.

? Florins = 1 Tael;
1 Tael = 61d.;
240d. = 10.90 Florins;
 $\frac{61 \times 10.90}{240} = \text{Florins } 277.$

(15) STRAITS T/T 46.

Like the Hongkong T/T rates, this has nothing to do with the gold exchange quotation and it means that 100 Singapore Dollars are equivalent to 46 Shanghai Taels.

(16) BANKS' BUYING RATE.

This means the rate at which the Banks will buy Gold.

(17) LONDON FOUR MONTHS' CREDITS 5/3 $\frac{1}{2}$.

As you will see, the banks' buying rate for four months' credit is 2 $\frac{1}{2}$ d. higher than the selling T/T rate; in other words, the banks will buy bills of exchange drawn on London on a letter of credit, bills payable four months after acceptance at roughly 4 per cent. more than they would sell themselves an equivalent amount payable in London on the same day. This 4 per cent. comprises first of all the difference between their buying and selling rates which in normal times is only $\frac{1}{4}$ d. and, furthermore, the discount that should be based on the London rate of discount, that is telegraphed out here when any important change occurs, or, in other words, the interest reckoned for the time elapsing between the moment that the banks pay the silver here and the moment when payment in gold is received in London. This period that, in normal times, is reckoned at about four months and a half, as bills can be sent via Siberia in about fourteen days, is now a very uncertain element and therefore the Banks have to cover themselves by taking a larger margin. Besides the difference between buying and selling and the discount, the bank has to reckon all charges and the eventual stamp duty.

(18) LONDON FOUR MONTHS' DOCUMENTS 5/3 $\frac{3}{4}$.

This rate is $\frac{1}{4}$ d. higher than the rate for four months' credits, as "documentary bills" known as such are not drawn under letter of credit and as the words convey, shipping documents,

insurance policy, consular invoice (if needed), etc., are attached to the bill, and the $\frac{1}{4}$ d. extra is added not only because the bills are generally not drawn on banks, but also, for the trouble of handling the documents.

(19) LONDON SIX MONTHS' CREDITS 5/4.

This rate is $\frac{1}{2}$ d. higher than the four months' credits rates on account of the fact that they are due two months later, the difference constituting the extra discount of 5 per cent. for that period.

(21) FRANCE FOUR MONTHS' 697.

The same remarks apply here as in paragraphs 17 and 18.

(22) AMERICA FOUR MONTHS' L/c, 124 $\frac{3}{4}$.

The same remarks as in paragraph (17) apply here but the margin taken is only 3 per cent. on account of the easier communication with the United States.

(23) AMERICA FOUR MONTHS' DOCUMENTS 125 $\frac{1}{2}$.

The difference of Gold \$.75 is explained as in paragraph (18).

I have mentioned already that these rates are the opening rates of the Hongkong and Shanghai Banking Corporation, but it does not follow that these are the rates at which another bank will sell or buy, the same being dependent on their own position and many other factors, that will make any one of the banks operating on this market a good buyer or a good seller, as the case may be. Nor are these the rates that the Hongkong and Shanghai Banking Corporation itself will quote for the whole day, as demand for T/T's or supply of bills may be so preponderant as to force the bank to alter its rates, and, in that case, the brokers are notified and carry the news around to the interested parties.

Rates In Other Ports.—In order to have a full knowledge of the mechanism of exchange as it works, not only in Shanghai but in all other treaty ports where the foreign banks have their branches, it will be necessary for me to explain to you how the Shanghai rates are converted into Tientsin, Hankow, Peking, etc., rates.

At 9.30 a.m., as soon as the opening rates are issued, the various foreign Banks telegraph to their respective branches the opening T/T rate on London; in the case we have just examined 5/1. From this rate (and let us take for the sake of simplicity only one of the branches) the Tientsin branch will work out its own rate into Tientsin Taels, applying the Tientsin-Shanghai cross rate that, for the sake of argument, we shall say is 106; and, therefore, for selling .2 points lower, or 105.80.

The formula that would be applied is as follows:

? d=1 Tientsin Tael;

Tientsin Tael 100=Shanghai Tael 105.80;

Shanghai Tael 1=5/1 (=61d.);

$$\frac{105.80 \times 61}{100} = 64.53d. \text{ or } 5/4\frac{1}{2}.$$

Therefore, the London T/T rate in Tientsin would have been on the same day 5/4 $\frac{1}{2}$ and the Branch Manager can derive from this rate all the other quotations for gold exchange, as I have shown you already in the case of Shanghai.

Exchange Banks and their operations.—We have now completed the description of the mechanism and I wish to give you now a rudimentary idea of how exchange banks do their work. It must, however, be understood that what I am going to tell you is simply an illustration; as, if the mechanism is fairly complicated as we have just seen, the working of it is much more so.

The ideal exchange operation for a bank is to buy at one rate and sell at another immediately or before the closing of the working day and leaving a margin of profit. As an instance, the easiest operation would be to sell T/T on London at 5/1 and buy back at 5/1 $\frac{1}{4}$, or, to be still more explicit, to buy T/T on New York at 121 $\frac{1}{2}$ and sell at 121. You will understand that if this is within the range of possibilities it very seldom becomes a reality, and the exchange manager has to find other means to cover his transactions.

Exchange Positions.—It is customary for him to keep what are called "exchange positions" recorded in statements with all details of rates and deliveries. This exchange position means nothing else but that the bank is either over-bought or over-sold to a certain extent, or, in other words, that a certain amount of his exchange transactions are not covered. It is in the taking of this exchange posi-

tion and in effecting the eventual cover at the best opportunity, that the exchange manager shows his ability. That ability and actual practice are necessary coefficients in a successful exchange manager you will understand yourself, as you have certainly realized the difficulty in his way. I must dispel from your mind the idea that the taking of these positions means gambling, because an exchange manager who knows his business is not gambling when he applies his knowledge and his intelligent perception, acquired by years of practice, to the carrying out of operations.

Nor is it necessary for him to take only one position, but he can take them both ways, or in other words, he can be over-bought and over-sold at the same time and still not consider that he has to put one against the other.

Forward Contracts.—Exchange contracts for buying or selling are not only made for ready delivery but also for forward. If you wish to buy T/T on London from a Bank, say in June, you can settle your contracts for delivery in December, but, of course, the rate that you will get for December will be lower, the difference being entirely dependent on the tendency and the monetary conditions of the market. Supposing the rate in June was 4/8 with a strong tendency you might have got 4/7 $\frac{1}{4}$ for December, or if you wanted a quotation for every month the contract would have said 4/8 June and $\frac{1}{2}$ d. down per month to December. If the market had been weak you possibly could not have done better than 4/5 December or 4/8 June and $\frac{1}{2}$ d. down per month to December. Likewise, if you want to sell four months' credit or documents for forward delivery, the example applies, only *vice versa*, as, with a strong tendency, you would have got the ruling market rate of the day for June and $\frac{1}{2}$ d. up per month to December. With a weak tendency, you might have obtained the ruling market rate up to December or, probably, even better. And this, of course, not only applies to London but, also, to all the other foreign markets with which this market is dealing, even to those whose quotations do not appear in the Exchange Bulletin.

Deliveries.—From the above you can easily understand that the exchange manager has not only to cover his operations as far as rates are concerned, but also must take into consideration the deliveries; as if he knows his business he must be able to conduct his transactions employing as little as possible of the capital of the Bank. It would not do, for instance, for him to buy a big amount for a certain month not having the corresponding delivery for sales down for the same month, as in that case he would have to take a large amount of silver out of the vaults of the bank to pay for the gold that he would have deposited in foreign countries, at the moment when probably the bank, of which he is only one of the elements, needed silver here for other purposes and had no use for gold abroad. Likewise, it would not do for him to crowd up his sales in any one month without having the corresponding purchases for the same month, and amass in consequence a big quantity of silver here that the bank had no means to employ and dispose of the funds abroad probably at a moment when the bank had to meet big obligations there.

This will give you an idea of how many things an exchange manager has to take care of, as it is not only the covering of his operations, as far as rates are concerned, that will worry him, but also, and what is more important, he must have full cognizance of the present position and future needs of his Bank, and this much more so in Shanghai where the head office of every bank is supposed to be and where all the exchange positions of all the other branches throughout China will converge, as generally those branches, to whom special instructions are given every day, telegraph every night their position that the exchange manager in Shanghai will take up and include in his own the next morning.

Covers.—I could give you numerous examples of how an operation can be covered, but I prefer to leave that to your imagination, as you must understand that this market presents far too many possibilities for any example to be of any real use.

I must mention, however, that one of the ways of covering exchange operations here is to buy or sell silver in New York or London. For instance, if you bought a four months' bill to-day at the rate I have put down in the specimen bulletin that I have appended, of 5/3 $\frac{1}{2}$, and you could get silver from New York at the parity of 4/8 $\frac{1}{2}$ c.i.f. Shanghai, evidently you would make a good margin. And there would be no need for you to ship the silver out here, as you could sell it later in New York, should the

rates go below parity, as happens occasionally in normal times, and be able to sell T/T at say 4/6. By selling the silver that you had previously bought in cover of another operation (and that not having shipped here would have cost you even less than 4/8 $\frac{3}{4}$ as there were no charge to bring it out and to be accurate 4/7 $\frac{3}{8}$) you could cover the second operation, and as the buying and selling of silver in New York would annul itself, the final result would be that you would have bought a four months' bill at 5/3 $\frac{1}{2}$ corresponding to a T/T rate of at least 5/1, and the real cover would have been the sale of the T/T at 4/6.

Another point that I have to mention is that it is not always necessary for banks to cover their transactions in the same currency, but they can buy for instance on New York and sell on

Paris, in which case, of course, the New York/Paris cross rate comes into play. This is generally called the triangular operation.

General.—I cannot close the subject of foreign exchange without wishing, for the sake of the Chinese themselves, of foreigners who have made China their abode, and of the ever-spreading number of those having trade relations with this country, that means be devised to do away with all the disturbing elements affecting the exchange quotations here, thereby securing exchange quotations following, as closely as possible, the parity of the metal on which they are based, leaving as the only element of uncertainty demand and supply, until such time as the conditions of this country allow of a reform of its currency system and a subsequent establishment of a gold basis.

The Soldier Curse in China

Some Reflections upon Present Day Conditions with some Practical Suggestions for Reform

* BY RODNEY GILBERT

In this year of grace militarism needs no definition. The scribes of a score of nations have been busy for five years condemning the militarism of Prussia in a score of languages, in prose and verse, in satire and burlesque, in breezy tirades and in solemn scientific analytical essays. While those whose business it is to talk and write have been thus engaged, and while a good many millions of others have been warring upon Prussian militarism with weapons which were for the nonce more effective than words, China, this land of confusion, has been building up an institution which the term militarism does not describe, for it is an original novelty among the world's evil institutions. The kind of militarism which the Central Powers developed and believed in carried with it certain attendant benefits, which were considered sufficient apology in Prussia for its existence. It maintained internal order, insured national efficiency in the defense of national interests, developed respect for authority, and trained the able-bodied male individual in self-defense, in physical fitness and neatness and in mental precision. This thing which the Chinese military leaders have inflicted upon the Chinese people, with the financial encouragement of Japan, while the rest of the world was not looking, is such a miserable travesty upon what we have fought in Europe that to name it militarism and damn it as such is to do it a thousand times too much honour. It is nothing but armed ruffianism which, in nearly every corner of Chinese territory, has made internal order impossible, which is hopelessly incapable of resisting an invasion, of resenting impositions from the outside, or of preserving national dignity and prestige. It has broken down all respect for authority. It has broken down the moral fibre of every able-bodied male Chinese into whose hands it has put a weapon, and has made a cowardly bully of him, an irresponsible and unspeakably cruel tyrant among the weak and helpless, and a groveling cur in the presence of a stronger man.

Every Chinese will admit that for national defence the Chinese army is utterly useless. A few Chinese officials, whose painful duty it is to explain to foreigners why there is an army at all, will try to tell those who have never been further inland than Peking, that it is essential to the preservation of internal order, that it is valuable as a constabulary force and that without this precious institution, anarchy would reign throughout the Republic. No Chinese, however, ever attempts to make such an explanation to a foreigner who knows a little Chinese and who has travelled beyond the bounds of the Treaty Ports in any one province. The more soldiers the more disorder, the more soldiers the less trade, the more soldiers the more bandits, the more soldiers the more opium and vice, the more soldiers the poorer

the accommodations and means of transport for travellers—all these are axiomatic in the minds of the Chinese people.

Each community in China has its quota of bad characters, thieves and brigands. A local constabulary force, if properly armed and efficiently led, can always more than deal with the lawbreakers. But it is the fashion now to use the presence of bandits as an excuse for inflicting upon the people of a country community a detachment of soldiers. Their arrival marks the end of peace and prosperity. The inns, schools and temples are filled with disorderly bullies who are never more than half paid and who never more than half pay for anything. Their commander at once becomes the biggest man in the community because he is the nominal chief of a band of really dangerous characters. He extorts money from the merchants and gentry under the pretext that he must pay his precious following or it will revolt and sack the place. He invents all manner of direct and indirect taxes and in addition commandeers all that he can find an excuse for taking. Public buildings are filled with his men who tear out the woodwork and break it up to cook their food. Merchants are forced at the point of the rusty rifle to sell their commodities for whatever the soldiery choose to pay. Countrymen transporting their products to town are met by the wayside and are relieved of whatever pleases the fancy of the troops. Farmers are encouraged to raise opium and then when the crop is ripening along comes a troop of armed villains, full of self-righteous importance, who announce that they have come to see the crop ploughed under and to arrest the farmer. After some little show of putting this into effect, an understanding is reached by which the crop is left standing on condition that the farmer pay the soldiers something more than half its value. He has no ready money so the ranks open and forth comes the opium broker who announces that he will advance the required funds at an interest of 12 per cent. a month on condition that the crop is sold to him when harvested at a little less than the market value. For the privilege of working with the soldiery he pays a generous tax to the military officials. If any person in uniform wishes to travel, or to haul anything in which he is interested, he seizes whatever means of transport he desires, makes the cartman, boatman, muleteer or wheelbarrow coolie unload any persons or freight that he may be carrying and enter into the service of the man with a gun, compensation for which does not buy him or his animals their food. This is known as *ch'ai-shih* and is an ancient official prerogative now shared by

* Mr. Rodney Gilbert has just returned from an extended journey in Western Kansu and the Sinkiang borderland, on which country he is a recognized authority.—Ed., F.E.R.

every man in a uniform. It is the *ch'ai-shih* tradition which gives the soldier his imaginary right to travel first class on the railways without paying, to camp in dining cars, sleep on the tables, spit on the walls and otherwise make himself at home, while the first-class passengers take their meals in their coupés. The result of this practice in the country is the speedy elimination of all means of transport from the roads upon which soldiers are known to be garrisoned. Trade comes to an end because there are no carts, boats or mules to do the carrying. Prices go up upon imports and prices upon local products, which cannot be shipped, go down to nothing. The number of the desperately poor increases by leaps and bounds, and within a very short time the community realizes that it has to deal with many more thieves and highwaymen than formerly. The soldiers go unwillingly forth to fight the brigands. If they meet them they are defeated; if the bandits elude them they pillage the country people and hold up traffic on their own account. It is decided that the soldiers are not enough, so more are brought. Again the number of bandits increases and soldiers and robbers take turn about in looting the villages. Then the military commander who has found his income falling off on account of the decline in trade and the poverty of the people, fails to pay his men; they mutiny and join the bandits; fresh troops come, go out to meet the augmented forces and are defeated; so it becomes necessary to send out a diplomatic agent and buy over all the mutinied soldiers and all the bandits, put them all in uniform and pay them all a salary for the first month or so. There are then about ten times as many soldiers in the community as it should ever have needed and the money appropriated for their support is wholly inadequate. Discipline becomes particularly lax, the men forage for everything that they get, the docile element among the country people starve while the spirited arm themselves and organize fresh bandit forces and the whole performance repeats itself, the evil of it multiplying itself with every repetition and the people becoming more miserable. The commander of such a force dare not disband it. He can only exert authority over it when directing it upon some nefarious exploit: but just this power to turn such a horde of armed villains loose upon the people gives the commander a prestige which few decent men would envy him, but which seems to afford some satisfaction to the spirit of the Chinese military official.

Traditionally the military official in China is the inferior of every civil official; but under present conditions the civil official in China plays a very small rôle compared to the military commander and has no power to support any decision which he may make that is counter to the wishes of the local military dictator. China is supposed to be governed by district magistrates, prefects, civil governors, provincial assemblies, a parliament and a president. Under actual conditions as we find them, the district magistrate is little more than a tax collector for the Occupation Commissioner (*Cheng Shou Shih*), the prefect is a superfluous subordinate to this same local dictator, the civil governor is nobody at all unless the offices of civil governor and military governor happen to coincide in one august military presence; half the provincial assemblies dare not meet, and those that do are under the direction of the military governor; parliament has no better standing and the president is the appointee and servant of the group of northern military governors known as the Tuchun clique. The power of this organization and of each individual in it is precisely similar to that of the local commander, whose troops cannot and will not fight, but who has the authority to turn them loose upon the harmless and defenseless people to perpetrate every cruelty and savagery and who is, therefore, feared on account of the evil he can do. No military governor feels under any particular obligation to obey the orders of Peking when they run counter to his own ambitions or to his personal profit, and no divisional commander, or other officer with sufficient men to cause trouble, feels under obligations to take orders from the military governor which are not in line with his own inclinations. There is no more respect among officers for authority and no more scruple about starting trouble, which will impoverish and make utterly miserable a district or a whole province, than there is among the illiterate and spiritless coolies in the ranks. What the latter make out of soldiering by looting and extortion their superiors earn by selling themselves to this political faction or that, by blackmailing their superiors, by "declaring their independence" and being bought back to loyalty and, in times of peace, which are

rare, by farming out the offices and taxes in the districts over which they acquire control.

The Chinese are an exceedingly courteous people. It is very difficult for any Chinese to make a discourteous response to a polite approach. The rules of etiquette are sacred and an excited or angry Chinese will always calm himself sufficiently to give a ceremonious reply to anyone who addresses him politely. This applies to all classes and all degrees with the single exception of the soldier. Gun in hand and belted with cartridges he is a studied brute who carefully avoids showing any mark of decency or humanity. Take his gun from him and slap his face, and he promptly becomes a most abject and contemptible coward, the trembling and willing slave of anyone who cares to boot him about.

With the exception of a few units, which are maintained at a comparatively high standard for show purposes, the Chinese army receives no training designed to fit it as a fighting force or to make it dangerous to any but the unfortunate folk among whom it is quartered. Each soldier gets a rifle of some sort, but no chance to practice with it unless he mutinies and loots a city. There is a good deal of drilling for parade purposes, but there is very little training in fighting tactics chiefly because the officers know as little about it as the men and partly because no one, officer or man, ever joins the army expecting to fight. In former times a Chinese soldier had a good deal of practice with the bow, the sword, the spear and with other primitive weapons. He was then a fairly dangerous opponent and a battle between Chinese soldiers entailed considerable bloodshed. A Chinese soldier with a rifle is now dangerous to no one at more than a few yards range. A battle is scarcely more sanguinary than an old-fashioned American 4th of July celebration was before there was any attempt to make it "safe and sane." Rifles and machine guns are discharged with much enthusiasm at the sky. The artillery usually kills as many friends as foes and in a day's engagement, in which 30 or 40 thousand men are involved, killed and wounded may not exceed a hundred. Decisive victories are won by buying off the opponents. In short, modern weapons, which are a great extravagance in a country as poor as China, have made Chinese warfare a veritable opera bouffe performance. If the army were as harmless in its dealings with the people as it is in its field activities, one might not begrudge China such a sparkling plaything; or if it were as efficient in national defense and the preservation of internal order as it is cruel and rapacious in its tyranny over the Chinese people, one might forgive it much of its brutality. It is the combination of uselessness and brutality that makes one's gorge rise.

That the Chinese people should willingly permit themselves to be fleeced for the maintenance of such an institution as this pseud-militarism does not speak very highly for their moral courage; and that they tolerate at all the sale of public properties and national rights to the Japanese by the heads of their military systems—for there are now several—brands them as the passive allies of their tyrants and of the Japanese military folk who are willing to promote chaos in this country because it serves their commercial and political ends.

Japanese propagandists abroad, during the period of the war, explained to the Occident that the anti-Japanese feeling in China was fostered entirely by German agents. With the war over, communications freer, most of the Germans locked up, and the censorship upon the press much lighter, they have been forced to abandon this line of explanation and to account for the unpopularity of their representatives, military and political agents, and their commercial folk, in China in some other way. This time they are telling part of the truth. They have been informing the West that the anti-Japanese feeling in China has been cultivated and fostered by the foreign journalists in China—British, American and French chiefly. To this the foreign journalists will cheerfully plead guilty. But they are by no means alone in their guilt. The Occidental merchants, missionaries, bankers, government employees, teachers, sailors, soldiers, adventurers, concession hunters and tourists of more than a month's sojourn, would, with the exception of a cautious minority, admit just as cheerfully as a journalist that, throughout the period of the war and during these six months of armistice, they have never ceased to anathematize Japan and have quite sincerely damned the Nipponese, both individually and in chorus. This charge the

Japanese do not make, however, in their campaigns of explanation and apology abroad, because it would be hard to explain. Journalists are supposed to be erratic, irresponsible and at times unscrupulous people, who delight in making trouble; and since it can no longer be safely announced that the anti-Japanese feeling in China was cultivated by the Germans, it seems wisest to the smooth-speaking Japanese walking delegates who are sent abroad to shout for democracy and tell the West how much they have done towards winning the war, to blame the otherwise inexplicable bad feeling that exists between Occidentals in the Orient and the most progressive nation in the East, upon the unscrupulous, trouble making scribblers. If it were ever necessary for them to tell the whole truth, to tell the West that the journalists have simply put in type the unkind sentiments which have been voiced in every corner of China where two Europeans or Americans have got together these four or five years, to discuss merchandise or scandal, to drink tea or better things, to sing hymns or devise ways and means to crime, it would be necessary to explain why this community of unkind feeling existed, which would be awkward and would require no little ingenuity. Japan has done a great many things to China in the last few years, which, if clearly understood in Europe and America now, would rule her out of the decent society of nations and put her in the same class with Prussia—yet not exactly in the same class for Prussia is now “down and out,” as we say in America, and is winning in the Occident that sneaking sympathy which no Anglo-Saxon can withhold from his most despised enemy after he has finished with him, while Japan is still “going strong,” as we also say in America. This the American and European colonies in Cathay have felt with growing intensity for four or five years, the feeling being more intense because the censors of a dozen Western nations took care that it did not find expression and because the golden tongued and elegant mannered barons and marquises, counts and princes, whom Japan scattered lavishly over the Allied portion of the earth to lie for her, were so eminently successful in centres of sophistication which have been eschewed by the goldbrick agent, the broker in ten-cent mining shares, the Indian mystic, the manipulator of the elusive pea, the eloquent peddler of pain killing panaceas and others of the cult for a generation or more. It really hurt to see how the folk at home were spellbound by these eloquent propagandists whom any second engineer on a Yangtze river steamer could have confounded and silenced with a series of a half-dozen charges and pointed queries.

While the white population in China was storing up indignation against Japan, it was also cultivating a deep sympathy for China. This seems to have been the only mistake made. In Yuan Shih-kai's time, when the Chinese Government stood up courageously against Japanese bullying and defied it with what little strength it had, the sympathy was with the Chinese Government as well as the Chinese people. When it became evident a year or so later that the Government, of which Marshal Tuan Chi-jui was the moving spirit, was in open league with the Japanese who were exploiting and capitalizing trouble in China, that a group of Tuan's followers had very apparently sold their services and were trying to sell as much of their country's liberties, resources and public properties to the Japanese as they could lay their hands on, sympathy was shifted from the Government to the people. For the last year or so we have all been busy maligning the Japanese who bought, the Government, which sold, and pouring out sympathy upon the people, who were robbed of their rights and their national heritages. It was in this that we were mistaken. We should have been maligning them all. We were not willing to acknowledge to ourselves, however, that the Chinese people, which means everything outside the Government that was doing the selling, had not earned and did not deserve our sympathies. Much less would we acknowledge it to anyone else. We knew Japan was fostering the foolish fracas between the North and the South because it gave her an opportunity to use her Chinese agents in the Chinese Government. In exchange for the arms ammunition, and supplies with which the North supplied its soldiers and the money with which it paid many times over for the loyalty of its northern military governors, Japanese agents were able to procure concessions and privileges which have given them undisputed control over Chinese Government affairs in the departments of war, finance and communications. We knew all this but we said that the Chinese people did not, that the

spirited Chinese people would not tolerate it if they did know, but would rise up in fervent and violent protest. We apologized fluently for the people, telling how few of them could read, how poor the means of purveying information were, how slow communications were, and how little the people were able to appreciate what information they did get. Subconsciously we knew perfectly well that between the ocean and the Tibetan border there were certainly about ten million able-bodied male Chinese citizens, officials, merchants, and men of property and leisure, who knew perfectly well what was going on. We knew perfectly well that as the news of a new raid upon Chinese liberties, a new graft engineered by the ministers in Peking who were peddling liberties, or a new bribe paid to a doubtful Tuchun, reached one of these enlightened citizens, he would say “*Ai-ya*” dramatically, waving his arms in despair, call for his water-pipe, ask his servant the price of beans, and then sit down to commune with his own spirit, saying enviously to himself “Wouldn't it be grand to be a Tuchun and hold the Government up for a million a month of Japanese money!”, or, “Isn't it hard luck that there's nothing in this place which the Japanese want and which I, as a fat and distinguished member of the gentry, could procure for them!” We know perfectly well that if we go to any official in north China with an account of how much the gentlemen in Peking who are “selling the country” get out of a certain deal with the Japanese, the official will express indignation, rage and despair in fine theatrical prose, and then, when we are gone, will forget it, if he is too small to hope to do anything, or will sit up all night figuring out how he can blackmail or cajole a little of the ill-gotten Japanese funds out of the lucky fellows in Peking who have been entrusted with the care of (which now means the sale of) the valuable public properties, if he is big enough to demand a share.

This accounts for certain classes of the Chinese people upon whom we have been lavishing our sympathies and in whose name we have waxed indignant since we gave up sympathizing with the Government. There remains nothing but the proletariat, the great masses of the people who do not know what is being done in Peking and who naturally do not care. After we have abandoned all hope of finding justification for our championing of China among the high government officials, the provincial officials, the scholars, the gentry, the big merchants and the middle class merchants who are still in the literate and well-informed class, we are forced back on the people and we say “they show no interest, display no anger and take no action because they don't know.” This seems a safe ground, for it is not difficult to round up a hundred coolies at any time in the shadow of the buildings in which most of the Japanese concessions have been signed, who do not know where Japan is or what it is, who do not know whether the ex-Emperor of China is living or dead, who could be convinced that Tuan Chi-jui was president of China without much difficulty, and who very naturally do not care. But these same people are very keenly observant of the evil effects of bad government even when they do not know the cause. The bogus militarism which official ambition, plus gross mismanagement, plus heartless disregard of public interests, plus Japanese money, plus Japanese arms, plus persistent Japanese meddling, has inflicted upon the country has spread over every province in China and, in the course of the last few years, has put a heavy blight upon several of the most populous provinces in North and South China by a concentrated demonstration of what it can do. Hunan, Szechuan and Shensi have presented the finest examples. Trade dies, agriculture is well nigh abandoned, hundreds of communities are gutted and all but obliterated, thousands are looted, the poor starve in bevies, droves or multitudes as the blight finds them. The young and old are ruthlessly murdered. The able-bodied escape, become bandits and play the same trick upon some other community until they are bought into one army or another and can carry on under the respectable aegis of the Chinese military flag. Women are raped and murdered, young women are carried off and sold. Paper money is issued by the military commanders to their troops and the troops exchange it for good money at the point of the bayonet, while their commander sees that real silver is paid into his coffers by Peking. Whenever the real silver runs short, the commanders hint at “independence” and there is a new Japanese loan. Now the people may not know about the loans, and they may not know that the bullets which hum through

the streets and the bayonets which disembowel their relatives are made in Japan, but no one who has been through a province in which the Chinese army, whether southern, northern, or independent, was active, would venture to state that the people do not know there is something wrong. One would not expect them to make coherent protest, but that they do not make the kind of incoherent protest, which illiterate peoples have made in France and Russia before now, is inexplicable to the Anglo-Saxon. The physical manifestations of Bolshevism, shorn of its frenzied philosophy, would grace the Chinese people of at least fifteen provinces at this hour of writing. The meek toleration of cruelties and abuses by the people and the calm indifferent contemplation of these abuses, and of the political rottenness which is at the root of them, by the literate classes, drives most of us who have been championing China in the abstract to the conclusion that the Chinese people as we meet and find them are not earning our interest or sympathy, because they show absolutely no disposition to take their own part or even to voice disapproval of the evil conditions which exist. A willing slave is the passive ally of his master. The Chinese people are the willing slaves of the poorest burlesque upon militarism on earth, and those who are responsible for this opera bouffe military system, and pretend to direct it, are the willing slaves of the Japanese military party, the expansionist party which believes in Prussianism in spite of all that has happened in Europe. It would seem then that at the present time China is the passive ally of this same Japanese institution. It is painful to have to come to this conclusion, but the active betrayal of China into the hands of the aggressive Japanese by those high up in Peking and the passive acquiescence of the people who know the evil as it is together with the bovine docility of the people who feel the real weight of the evil, force it upon us. It would sound like an exaggeration now to say that Japanese Prussianism was a menace to the civilization of the world, because we are not afraid of much of anything just now and Japan's military power is a trifling unit compared with the strength of the nations which have undertaken to remake and protect the world's civilization; but if this little Japanese institution is not a menace to civilization it is certainly not in harmony with it. Chinese pseudo-militarism is so much less a menace to anyone but the Chinese that it is scarcely worth mentioning among the world's political influences, but the two combined in the rôle of active and passive allies may be worth damning; and if they are, from this time forth they should be damned together.

For a good many years China, like a penniless coquette, has had no political asset but her desirability. Conscious of this she has flirted with the great nations and whenever she got in trouble with some big brute of a nation, as the coquette gets in trouble sometimes with a big brute of a man with whom she has gone too far, she has cried piteously "Poor China!" and all the other big nations have echoed "Poor China" and have gone manfully to her rescue. China still counts upon this. Now that she is flirting and dallying with Japan, she still believes that should Japan seize her bodily and try to take possession of her, she can still cry "Poor China" and be chivalrously rescued. China is a spoiled coquette in international politics and needs to be called a few hard names and to be very unchivalrously handled, if she is to learn modesty, caution and reserve. Sympathy is worse than wasted now—it is dangerous to our interests.

Allied diplomatic action brought China into the war. Japan pulled her political wires in Peking and the benefits which the Allies might have derived from active Chinese participation in the war were nullified by internal disorder, intrigue and corruption. We have big commercial interests in China. The ragged, irresponsible Chinese soldier rollicking at will over the Chinese landscape, as a part of the unsystematized military system which Japanese money has fostered and nourished in this country, reduces the value of these investments by a huge percentage and discourages new investments. This is not to the interest of Occidental investors nor to that of the Chinese. The further growth of military terrorism under Japanese tutelage and encouragement threatens foreign investments in China with a still further reduction in value and returns. We have talked a great deal, we Westerners, about saving China for China's sake. It is now time that we talk along the same line in our own interests.

Apart from commercial interests, there are political interests. Japan is not interested in wrecking China for all time. Through corruption she achieves disruption in China, and through disrup-

tion she hopes to achieve penetration, both political and commercial. When, through these means, she achieves control of all that is worth managing both politically and commercially, she hopes to straighten the country out in her own interests. Among other things, the expansionists, who are always cheered in Japan when they are successful and who, therefore, make strenuous efforts to succeed, will undertake the straightening out of the army. Under strict discipline, under officers in whom he has confidence, and with proper pay, food, training and arms, the Chinese is an excellent soldier; and there are said to be four hundred million Chinese. The Japanese expansionists still admire Prussianism, as aforesaid; a very big proportion of the Chinese male population would fight anything or anybody for ten dollars Mexican currency a month, regularly paid on specified dates in hard cash, and under the proper conditions the Chinese will fight. This sounds like a hint at the Yellow Peril, but if there is a peril it is a long way off and is easily averted, if the various statesmen of the various great nations will ever shake off the spell of the titled walking delegates from Nippon and realize what is going on in the Orient. For while the Chinese can fight he would much rather farm. Given proper government, proper industrial conditions and peace at home, fighting is the last thing that any Chinese would ever think of.

The surest way to put a curb upon the ambitions of the Japanese Prussianists would be to make China a comfortable and wholesome place for the Chinese people to inhabit, and after a good many years of observation and speculation in China each individual foreigner comes to the conclusion that the surest way to do that is to abolish the army and build schools. In the face of existing conditions this sounds rather drastic. The Peking Government and its military barons in the provinces, the various southern leaders, who have been devastating provinces in the name of liberty and constitutionalism, the "independents," the bandits and others, probably have about 1,700,000 men under some sort of arms at present. It is no light task, under the existing orders in North and South, to disband a company and to get rid of all the land pirates now under arms without subjecting the country to the most gruesome form of anarchy would be a task for a fair sized army of occupation. If the Chinese themselves were seriously interested in reducing or doing away with their army, the ways and means should certainly be left entirely to the Chinese themselves, for the Chinese have their own ways of doing things, they foresee difficulties which no foreigner could possibly anticipate and know how to meet them in orthodox Chinese ways. What the Chinese have to prove is a sincere desire to do away with the soldier pest. In the hands of the successful politicians the army is a convenient plaything. In the sight of the politician who aspires to power and prestige, the acquisition of influence over a certain portion of the army, whether irregular or regular, appears to be the shortest road to greatness.

All will agree that disarmament would be the solution of many of China's internal and international difficulties, but they all mean the disarmament of the other fellow. The southern delegates at the Shanghai Peace Conference have focussed upon the supernumeraries who constitute General Hsu Shu-cheng's so-called Army for National Defense. This is a conspicuous target and the bombardment of this target has caused a much greater diversion from the essential question than it deserves. If we once permit ourselves to be dragged into a discussion of the relative iniquitousness of any particular regiment, division or army, the essential problem of reform will be most effectually befogged. All intelligent Chinese realize this; they see in the various proposals from the various representatives at the Peace Conference nothing more than an effort to befog the vision of their opponents, and all China agrees, therefore, that the Peace Conference is a farce, that it has achieved nothing and will achieve nothing, and that every delegate in Shanghai is busy evading every proposition which hints at fundamental reform.

If any representative were inadvertently to sign his name to any document in which the military leaders whom he represented were pledged to the disbanding, reduction or reform of the troops under them, he would consider that he had failed ignominiously in his mission. If all the delegates were forced by public opinion (a most unlikely contingency, since public opinion has never learned to manifest itself in China), or by pressure from without, to adopt an effective bill of demobilization and reform, covering all parties and provinces, all the

military folk concerned would consider the Peace Conference a ghastly calamity. It would not be a bad joke upon these folk, therefore, to put before them a schedule of reform and have them adopt it and then have them submit it to the conference in Paris for confirmation and a guarantee from the Powers that they would assist whenever assistance were needed in having it enforced. How demobilization should be undertaken, how the troops should be paid off, what should be done with them after they have been paid off, look like momentous problems now, but they are not beyond Chinese ingenuity if China should be made to feel that she were under serious obligations to effect this reform.

No foreign power, with the possible exception of Japan, would begrudge China an effective national army, free from foreign influence, big enough and well enough equipped to maintain internal peace. If foreign pressure were brought to bear upon the Shanghai peace conference now, however, with a view to making the Chinese understand that they must purge their country of their wholly useless and destructive military organization, the militarists would at once announce to the world that the foreigners were trying to draw China's fangs, that they were trying to render her harmless and helpless and put her utterly at their mercy. They know perfectly well the utter futility of their military organization, but they make believe that they believe in it: and the Powers have solemnly made believe that they believe in this make-believe and have encouraged China in the conceit that the world takes her soldiery seriously. It is essential now, if any advantage is to be taken of the presence of accredited representatives of the various factions in Shanghai, that all camouflage be dropped and that China be told quite frankly what is the matter with her and what steps must be taken to earn and hold international respect.

During the last few months many Chinese and foreigners have been busy drawing up demobilization schedules, each one a guaranteed panacea for all evils. Most of these entail the borrowing of huge sums of money to pay off all the soldiery, except the most efficient divisions, which are to be retained as the nucleus of a reformed army. One foreigner, whose knowledge of Chinese affairs is unrivalled, has evolved a scheme, by which he would turn the whole organization into a vast labour corps. This authority, who has consulted nearly every important military leader in the North and South, assures us in his schedule that there are not more than 600,000 properly armed men in all China and he suggests that when demobilization comes only those who can produce a rifle and one hundred rounds of ammunition should be paid off. He suggests that the country be divided into five military districts, that in each district a demobilization chief be appointed to select the five best divisions as the nucleus of a future model army, and that all who are paid off and who plead that they have no work and no prospects be given picks and spades and be put to work upon the improvement of roads and waterways. He believes that the five well equipped divisions retained in each district would be sufficient to maintain order if the others were inclined to create trouble when their rifles were taken from them.

This takes up in a practical way the immediate disbanding of the supernumeraries and this plan is not an idle dream, but like most of the Chinese suggestions it does not seem to lead to a fundamental cure. The problem is not so much one of getting rid of the vast horde of uniformed coolies, though this is serious enough, as it is one of preventing in the future the reorganization of such hordes. The Chinese, given to understand that they must get rid of their useless army, have sufficient ingenuity to do it in their own way. The first thing to do is to make them understand that it *must* be done. Given this understanding, they would undoubtedly devise a schedule much more economical and much more effective than anything which a foreigner could think up in a year's meditation. The second duty of the Powers which are interested in China's reform would be to see that regulations were laid down and registered which would prevent a resurrection of this Chinese burlesque of Japan's burlesque upon Prussianism. The way to do this is to make military service a serious undertaking, as serious as sailing a boat, pushing a wheel-barrow or plying any other craft or trade. The restrictions upon the military must be such that those who now regard it as legitimatized banditry will eschew it with terror, while those whose native honesty forbids them to wear a uniform can carry arms under the

Chinese flag without shame. When it is understood definitely that a soldier has no more license to commit depredations than a farmer, but that fair pay is given in return for fair service in the Chinese army military reform will have ceased to be a problem. Pay off the surplus soldiery now with borrowed money, retain a few hundred thousand of the existing force as a nucleus, carrying on under the old conditions and in six months conditions will be as bad as ever and demobilization will have been found profitable to the officer caste, and, therefore, essential, so it will all have to be done over again. Before any scheme is devised which entails the expenditure of a cash or the bribing of a single soldier to yield up his gun it is necessary that the army be made a most unattractive organization for all but those who are willing to work or fight in all seriousness for a living. If the present peace conference could do this, could impose upon the army regulations which would, if enforced, purge it of its power to do evil, the question of demobilization would be nothing more than a question of routine. To this end the Shanghai Peace Conference might adopt a drastic schedule of restrictions, call the Powers, now represented in Paris to witness it and then invite the military folk of both North and South to quit in whatever way they saw fit and, if the decision of the delegates in Shanghai were approved by the Powers, there would not be much for the military to do but quit. By way of suggestion, actual observation of conditions in China has prompted us to believe that the following would be useful items in a set of rules hobbling the bogus militarists.

The national appropriation for military expenditures should never exceed one-fourth of the estimated national income, except in time of war with a foreign nation, and should never, in time of peace, exceed the appropriation for educational purposes.

Under no circumstances should the national or provincial governments have power to contract either foreign or domestic loans for military purposes. Neither the national nor provincial governments should have authority to purchase foreign military supplies without a special order from parliament. In no case should a provincial government or any independent organization be permitted to purchase military supplies from abroad. The central government should not be permitted to make assignments of arms or military supplies to the provinces without a special order from a parliamentary committee authorized by the representative body to pass upon such assignments.

The office of Military Governor (Tuchun) should be abolished. No military officer should be permitted to act concurrently as a civil official, nor should any military officer be permitted to administrate in matters of justice, taxes, industry or other matters falling within the province of a civil official. If provincial forces are organized they should rank as constabulary, and not as soldiery, and the head of the provincial constabulary should in no instance rank higher than the *taoyin* of the capital city of the province. No military officer, whatever his rank or place of residence, should be equal in rank with the Civil Governor of a province. No Civil Governor should in any instance have authority to take command of troops, apart from those of his personal bodyguard, which should be strictly limited to meet the necessities of the local situation. No military official should be permitted to accept decorations, domestic or foreign, except in recognition of merit or bravery in actual field service.

Whatever schedule for the disbanding of the present army and the garrisoning of the provinces and the borders is adopted, it should be a criminal offence for any person or group of persons, no matter what their official positions, to recruit troops without a special order from the Ministry of War, *visé* by a parliamentary committee authorized to pass upon such matters.

The military authorities should have absolutely no control over either urban or rural police, and the number of police needed by the civil authorities to maintain order in a given community should be decided locally in every case, by specially appointed boards upon which the military should have no representation, but upon which the local Chamber of Commerce, the gentry and the district (hsien) magistrate should have equal representation. Any attempt by the military to recruit soldiery under the guise of either civil or military police should be reported by the local authorities as sedition and should be dealt with as such.

The times and occasions when soldiers are permitted to carry firearms outside of barracks should be strictly limited. Soldiers should only be supplied with firearms for musketry practice or drill and should not be permitted to leave the barracks armed except when on actual service, that is, when the district or the nation is in a state of war. The Civil Governor of a province, with the approval of the provincial assembly, should be empowered to decide when a district or a province is in a state of war. The President of the Republic, with the written approval of parliament, should be empowered to determine when more than one province or the nation at large is in a state of war. The decision of a provincial governor and provincial assembly as to a local state of war should be reversible by parliament.

Soldiers when permanently quartered in any city or community should be garrisoned in buildings erected for the purpose. No inns, temples, schools, guild halls or other buildings of a public or semi-public character should under any circumstances be occupied by troops in time of peace for a period of more than three days, or in time of war for a period of more than three weeks. When travelling, either individually or *en corps* all those in military service should pay full rates for accommodations in inns and fair compensation for quarters in other buildings, or be quartered in camp on land set apart for them by the local authorities. In case of dispute about rates the local Chamber of Commerce, in conference with representatives of the local civil authorities, should fix rates for accommodation.

Except when a state of war has been formally proclaimed, no body of soldiers should be permitted to travel armed. In districts where travellers are exposed to attacks from bandits or uncivilized tribesmen, a maximum of one-fourth of the total number of soldiers in the travelling unit, should be equipped with arms when notice has been given the local civil authorities and their approval received. Failure to obtain such approval should give the military concerned the right to appeal to higher civil authorities, but should not warrant them in proceeding armed until permission had been obtained from the higher authorities.

No individual soldier on furlough, or when travelling for any other purpose, should be permitted to carry arms unless he is supplied with a special passport by his military commander testifying that he is on a military errand. Individual soldiers should reside either in places of public accommodation or in garrisons, where such exist, and should under all circumstances pay full rates for food, lodging and transport.

The military should never be employed in the collection of taxes or the suppression of such public evils as the growth, sale and use of opium. Where the civil authorities meet with opposition in the collection of taxes or the suppression of any public evil, they must have recourse to the local police and can only call in the soldiery to their support upon a special order from the Civil Governor, approved by the provincial assembly. Soldiers who give protection to opium growers, or traders, or to violators of the law of any class, should be considered criminal accessories, should be taken and tried by the civil authorities and given double the sentence inflicted according to law upon civilians. The military should never be permitted except in time of war to erect barriers on highways, waterways or railways for the examination of persons, baggage or freight. They should not be permitted to hold city gates or other barriers already erected, or in any other way to interfere with communications or trade.

The entire body of the soldiery should be employed when not on actual field service or upon the patrol of unsettled districts, upon public works, such as the construction and upkeep of roads, waterways, bridges, etc. Officers below the rank of Brigade Commander should personally supervise whatever public works are undertaken and act as foremen upon the ground. The character of the work to be done should be decided by the provincial assemblies in each instance and all costs, above the pay and maintenance of the men, should be determined and passed upon by a special committee in the assembly.

The commandeering of animals, means of transport or of the services of laborers by officials, whether military or civil, should be abolished and hereafter strictly prohibited. The military, in hiring carts, wheelbarrows, carrying coolies, boats, mules, camels, etc., or in employing labor, should pay full local rates as determined from time to time by the Chamber of Commerce of each

prefecture. Any attempt in time of peace to interfere with trade or travellers by taking means of transport from them for military purposes should be reported to the local civil authorities, who should bring it to the attention of the military and insist upon the punishment of the offenders and the compensation of the injured parties.

Soldiers should not be permitted to travel on any ordinary passenger train on public or private railway lines except at full rates. No passes should be accepted from soldiers or officers or from anyone bearing a military title or holding an office in the military administration. No special trains or cars, whether passenger or freight cars, should be supplied the soldiery or their officers except upon a joint order from the Ministry of War and the Ministry of Communications. Such freight cars, special cars and special trains as are required by the military should be paid for at fixed rates to be determined by representatives of the Ministry of Communications and the Ministry of War and approved by a parliamentary committee.

In the maintenance of order the police should have absolute authority of the soldiery and power to arrest disorderly individuals or groups. In time of war only should military bodies be exempt from police restrictions upon their movements, and at such times communities in which soldiers are quartered or moving should be supplied with military police sufficient to deal with their own men and these police should have power to correct or arrest the military only.

Complaints by civilians against soldiers or bodies of soldiers should be received and investigated by a committee of the local Chamber of Commerce and a representative of the local magistrate. Reports should be submitted through the local magistrate to a committee of the provincial assembly empowered to assess double damages upon the military unit to which the offending soldier or soldiers belonged.

Prices of necessities purchased by military organizations or by individual soldiers should be fixed in cases of dispute by the local Chamber of Commerce in conference with one representative of the civil magistrate and one representative of the local military commander.

No military official should be permitted to enter parliament or a provincial assembly as a visitor except upon special invitation. No soldiers in uniform should be permitted to enter the public galleries of any legislative body. No soldiers should be stationed or quartered within half a *li* of the meeting place of any legislative body. No legislative body should have a military guard placed at its entrance or in its vicinity except when the legislature itself requests it. No military official should be permitted to address official correspondence to the President of the Republic or to Parliament except through the mediation of the Ministry of War.

Any attempt on the part of a military officer to purchase arms or other military supplies or to borrow funds other than those supplied him by the Ministry of War should be considered guilty of sedition, should be courtmartialed, dishonorably discharged, should be tried and punished by a criminal court and should have his offense and removal formally proclaimed throughout the army. Any attempt on the part of an officer to move troops without the knowledge of his superiors, to enlist troops without authority, or to enter into contracts, treaties or conspiracies with foreign agents or with other military commanders for political purposes, should be dealt with in the same way.

Elections should be wholly free from military interference and no armed soldier should be permitted to approach the vicinity of a voting place. No soldier or officer should be permitted to announce his candidacy for a civil office until he had resigned from and been discharged from the army. Political alliances between military commanders should be regarded by the higher military authorities as conspiracy and should be dealt with as such.

A military penal code, prescribing punishments for violations of these regulations, should be drawn up by a special commission appointed by the Ministry of War.

A system should be devised by such a special commission which would guarantee regular and full pay to the soldiers and a regular system of promotion for officers, so that no one, without proper military training could, through influence or purchase, obtain either a commission or a promotion in the army.

The system of enlistment, drill, musketry practice, etc., should be made uniform throughout the army and some attempt should be made to standardize arms and ammunition, so that economy and greater efficiency would be achieved, and particularly so that officers and men in the army could acquire some little sense of responsibility and some little self-respect.

Some such set of regulations as the above if enforced would make China a much more comfortable place for the Chinese people to inhabit, would increase the value of foreign investments and would soon make China an inviting field for both native and foreign enterprise. The items which are given above are not complete but are simply suggestions for correcting evils which the writer, in travelling over the length and breadth of China, has found flourishing at one time or another in nearly every part of the country. A council of experts could undoubtedly draw up a much more complete set of regulations, but whatever the criticism of that which is written, it must be confessed that the evils indicated exist nearly everywhere in China and are crying out for correction.

Now that both the North and the South are represented in Shanghai the foreign Powers have an exceptional opportunity to come down heavily upon the gathering there, present some such set of rules as the above, together with a scheme for the imminent disbanding of superfluous troops, and insist that they be adopted and registered with the nations now represented in Paris as a guarantee of fulfillment. Nothing would be more distasteful to the politicians and military leaders who are now potentially China, but on this score China deserves absolutely no more sympathy or consideration until she has shown some disposition to earn them.

One of the most reasonable schemes for the immediate disbanding of a great proportion of the men now under arms, is the one to which we have already referred, drawn up by a well-known foreigner whose knowledge of Chinese political matters and whose influence among officials of many factions in both the North and the South are unrivalled. The following is this authority's own summary of his scheme:—

1.—That China be divided into five military departments as follows:—

- (a) Department of the Northeast.
- (b) Department of the Northwest.
- (c) Department of the Centre.
- (d) Department of the Southwest.
- (e) Department of the Southeast.

2.—That the President appoint by Mandate one commander, and one deputy commander over each Department.

3.—That the five Department commanders acting under the direction of the Minister of War compose the Disbandment Commission.

4.—That the Consortium appoint representatives of the banking groups participating in the reorganization loan as members of the Financial Commission for the Disbandment of Troops.

5.—That the Disbandment Commission and the Financial Commission for the Disbandment of Troops each appoint two representatives, who shall under the direction of the Minister of Communications form the Public Works Commission for the employment of disbanded troops.

6.—That the Chinese army be reduced to a peace basis of 250,000 men, or 25 divisions of 10,000 men each.

7.—That every soldier disbanded shall possess one rifle and one hundred rounds of ammunition, and that only those soldiers possessing such equipment shall be considered as part of the Chinese army to be disbanded.

8.—That the Disbandment Commission shall turn over to the Financial Commission for the Disbandment of Troops every soldier disbanded together with his rifle and 100 rounds of ammunition.

9.—That the Financial Commission for the Disbandment of Troops shall act as custodians for all arms so received from disbanded soldiers, and shall turn the disbanded soldier over to the Public Works Commission for the employment of disbanded

troops, and each soldier so passed to the employment commission shall be given employment upon the following basis:

- (a) Wages amounting to \$8.00 per month.
- (b) Food and clothing.
- (c) Lodging.
- (d) Term of employment to be five years.

10.—That the Public Works Commission shall undertake the construction of public roads and conservancy of waterways only.

11.—That, after the national army has been reduced to 250,000 men, the Disbandment Commission and the Financial Commission for the Disbandment of Troops shall be abolished, and that all of their work shall be undertaken by the Public Works Commission for the employment of disbanded troops.

12.—That half of the national army be stationed on the frontiers of China, and that the other half be divided into brigades of 5,000 men each, and one brigade stationed in each provincial capital.

Iron Manufacture in Shanghai

The idea has recently been mooted that blast furnaces and steel-works could be profitably built in Shanghai. So long as the present instability of the Government persists the idea may seem attractive, but there are certainly some serious difficulties. Assuming a low grade ore (say forty per cent. of iron) to produce one ton of pig iron it requires two-and-a-half tons of ore, one ton of coke or anthracite and half-a-ton of limestone, making a grand total of some four-and-a-half tons. If good cast iron or steel is required, upwards of half-a-ton more fuel is required. Supposing high grade ores (say seventy per cent.) are available, one ton less ore per ton of iron is required. Hence it follows that from four to five tons of raw material are required to produce one ton of cast iron or steel. The raw materials exist in various localities off the Yangtze valley from above Hankow down to Chinkiang, but speaking very roughly it seems probably that the most economical site (the point at which the total cost of transporting the raw materials is a minimum) would not be less than 200 miles from Shanghai. Even at railway or steamer rates of say one cent per ton mile and disregarding the cost of transhipments it seems certain that iron-works in Shanghai would be burdened with an economically unnecessary expense of at the very least ten dollars per ton of iron, due to freight on raw materials.

The question then is whether the advantages of security, markets, etc., in Shanghai outweigh the extra freight on raw materials. In any ordinary country, they certainly would not do

The Late Jeme Tien-yu

Mr. Jeme Tien-yu, who died at Hankow on April 24, was one of China's most prominent engineers and students of modern progress. His most important work was the construction of the Peking-Kalgan Railway, of which he was chief engineer. More recently he has been President of the Kwangtung division of the Canton-Hankow Railway and assistant director of the same line, an appointment which he received in 1911-12, and since 1914 the director-general of the Canton-Hankow-Szechuan line. He was born in Canton in 1861 and was educated at the Chinese Educational Mission School of Shanghai. He subsequently went to the United States and studied civil engineering in Yale University, gaining his Ph. B. degree. It was at Yale where his fellow students dubbed him "Jimmie" from the Pekingese pronunciation of his family name, Chan; and thereafter Mr. Chan Tien-yu became Jeme Tien-yu.

On his return to China he completed his course in the Naval School connected with the Foochow Arsenal and, after a course of teaching in Foochow Arsenal School and the Whampoa Government School, he took up various engineering appointments on different railways.

A Prosperous Mine in Korea

The Year's Operations of the Seoul Mining Co.

At a meeting of the shareholders of the Seoul Mining Company at Deep River, Connecticut, the Directors announced in their report that the usual dividend of 50 per cent. would be declared from profits of \$330,526 gold resulting from the workings of the Mining Company's properties in Korea during 1917. The



THE FOREIGN STAFF

Company operates three successful mines, the Suan, the Tul Mi Chung and the Tong Ahm, and is developing three others—the Soctarie Deposit, which consists of an extensive band of quartzite interbedded with limestone, of an average thickness of 25 feet, which is mineralized with tungsten, gold and copper; and the Kung Kol and Tuck Kol deposits. The gold in the Tul Mi Chung mine is now being obtained by flotation, but steps are being taken to install a cyanide plant in addition. It is estimated that the treatment of the tailing already accumulated will yield gold of a value more than double the sum necessary to defray the installation of such a plant, designed to treat 600 tons per day, and the percentage of the gold recovered from fresh ore will be increased to 85 per cent. instead of the 60 per cent. at which it now stands.

Although the Seoul Mining Company is capitalized at a million gold dollars, but 20,880 shares of the value of \$25 each have been issued, and the Company therefore operates on a capital of \$522,000. Its assets stand at \$3,613,021 on its annual balance sheet. Its gross profit in 1917 amounted to \$1,698,417, and of this amount \$330,526 is applied to dividends. The report of the General Manager gives an excellent description of operations in 1917 and of the properties, and excerpts of this report are given below.

During 1917 215,039 tons of ore were milled at the Suan and Tul Mi Chung plants for a total reduction of \$1,636,922.61.

During the year the increasing effect of war conditions on prices of all mining supplies and machinery more seriously affected our operating costs than has hitherto been the case. Not only all imported, but also all local supplies have greatly appreciated in value; for instance, the cost of lumber has increased about one-third during the year, and that of coal has about doubled. All foodstuffs and native produce have been similarly affected, and, though we have not been compelled to increase the rates for Korean pay, a good deal of unrest prevails, which is added to by the large number of new enterprises recently started in the neighbourhood of the mine, all of which absorb a large number of Korean coolies at higher temporary rates than those permanently in force at the mine. In addition, our operating cost has been added to by the difficulty in obtaining delivery of machinery and permission to export our requirements from abroad, and, further, of securing freight space for ocean transport, the rates for which have greatly increased during the year.

Notwithstanding these adverse conditions, and due to economies introduced and an increased tonnage milled, it is satisfactory to be able to report that our operating costs show a decrease as compared with previous years, and amount to \$3.46 per ton of ore milled for 1917, as compared with \$3.98 in 1916, and \$3.94 in 1915. We have also been able to continue our operations uninterruptedly, and no delays have occurred during the year through non-delivery of supplies ordered.

The following is a summary of the Ore Reserves on the Concession, including both proved and probable ore. The reserves at Tul Mi Chung and Suan Mines are made up to the 31st of January, 1918. The estimates of the Tong Ahm Mine, Soctarie Deposit, and other Developments have been made up to date at the end of 1917. The following tabulation, therefore, only covers eleven months' development so far as Tul Mi Chung and Suan Mines are concerned, and ten months' so far as Tong Ahm, Soctarie and Kung Kol are concerned.

| Location. | Tonnage of Ore Reserve. | Average Value per ton. | Gross Value. |
|--------------------|-------------------------|------------------------|--------------|
| Suan Mine | 29,170 | 12.58 | 366,996 |
| Tul Mi Chung Mine | 484,670 | 10.30 | 4,990,146 |
| Tong Ahm Mine | 16,500 | 9.58 | 158,070 |
| Soctarie | 267,717 | 4.93 | 1,319,845 |
| Kung Kol | 10,000 | 10.72 | 107,200 |
| Tuck Kol | 8,900 | 7.12 | 63,368 |
| Totals and Average | 816,957 | \$8.575 | \$7,005,625 |

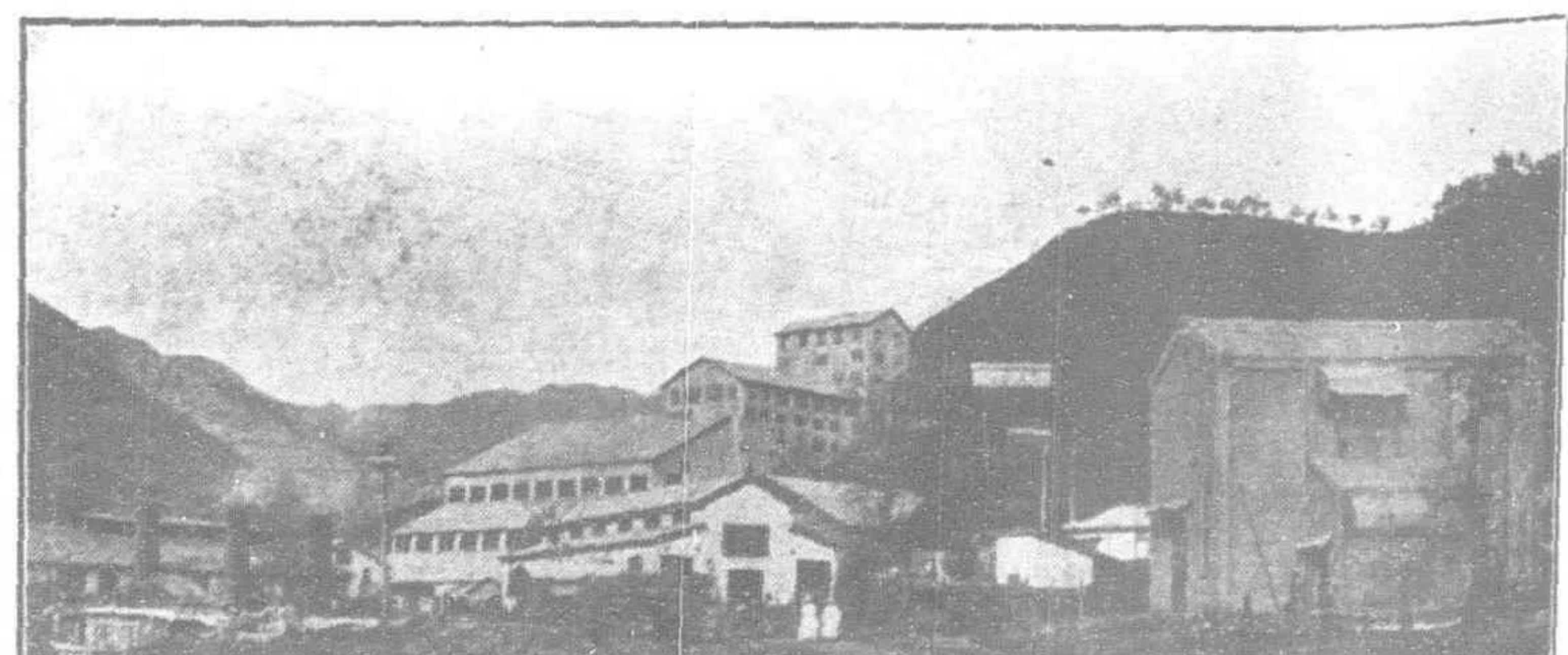
The Suan Mine is now approaching exhaustion, after having produced \$5,268,206.70 from the mining of 541,399 tons of ore to the end of 1917, and the Ore Reserve was not greatly added to by the development during the year.

Not included in the estimate of Ore Reserves is the amount of tailing from the Tul Mi Chung milling plant, which is now impounded for future re-treatment below the mill. Until a cyanide plant is erected, or some other method of re-treatment available, the value contained in this tailing pile is locked up. It consists of approximately 180,000 tons containing an average content of \$2.78 of gold per ton, or a total gross value of slightly over \$500,000.

The total amount of development work on the Concession for the year was the greatest to date, amounting to 31,312 feet.

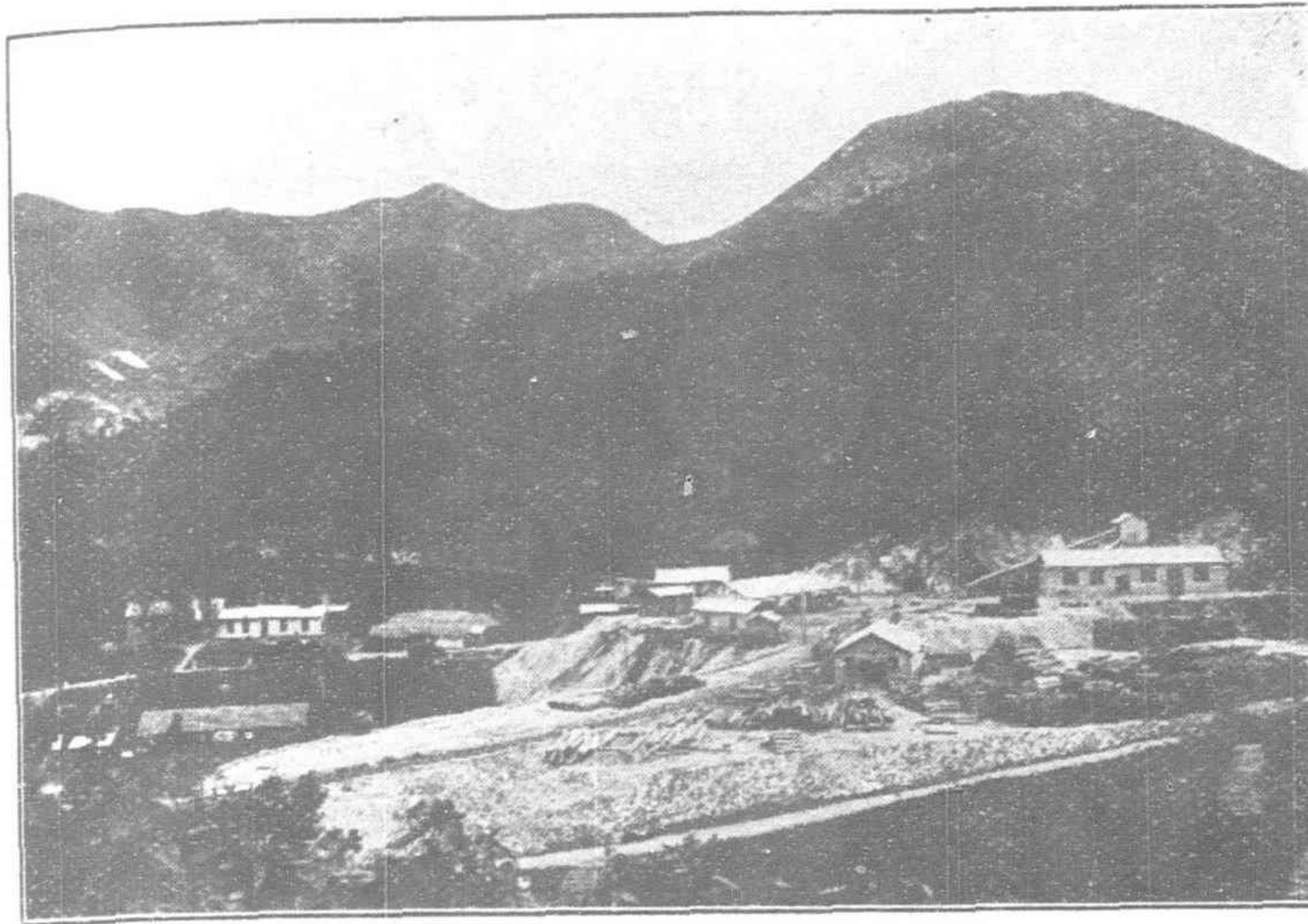
The Tul Mi Chung milling plant was in full operation during the year and operated smoothly throughout. The metallurgy of the ore continues difficult, for, while the copper extraction continues satisfactory, the gold extraction remains low. A great deal of experimental work has been carried out at the mine, and also a large amount of ore testing and metallurgical investigation has been, and is still being, made in the United States and England, mainly by the Dorr Company, of Denver, and by Messrs. Sulman and Picard, of London. It appears feasible to obtain a satisfactory gold extraction by erecting a cyanide plant to treat both the current mill tailing and that accumulated, but, in view of the greatly increased cost of all plant and the difficulty of obtaining the whole of the machinery and plant required at any price, it is considered advisable to postpone the erection of such a cyanide plant and devote our efforts towards improving the gold extraction by flotation and concentration, and possibly by amalgamation, as the character of the ore lately developed has considerably changed, making it necessary again to consider the possibility of amalgamation, which has so far failed to recover a sufficient proportion of gold to make its introduction profitable.

Owing to the decreased tonnage of ore produced by the Suan Mine, only a portion of the Suan Mill has been in operation.



TUL MI CHUNG—GENERAL VIEW OF MILL

The milling results obtained in this plant are very satisfactory, both as regards gold and copper extraction, and the efficiency of the treatment is maintained at a high standard.



TUL MI CHUNG—VIEW OF PORTAL AT MAIN ADIT

At Tul Mi Chung, mining and milling operations proceeded uninterruptedly and continuously during the year. The mine produced 149,195 tons of ore, from which a total return of \$1,129,802.05 was obtained. The average grade of the ore milled was \$6.33 gold per ton and 0.93 per cent. of copper, or a total average grade of \$9.94. The following table gives a summary of the Ore Reserve in the Tul Mi Chung Mine on the 31st of January, 1918:—

| | Positive Ore. | Probable Ore. | Total. |
|----------------------|---------------|---------------|-------------|
| Tons | 366,900 | 117,770 | 484,670 |
| Gold : Dwt. per ton | 6.17 | 5.03 | 5.89 |
| Value | \$2,337,961 | \$612,244 | \$2,950,205 |
| Copper : Percentage | 0.92 | 1.00 | 0.94 |
| Value | \$1,350,924 | \$470,916 | \$1,821,840 |
| Silver : Oz. per ton | .6 | .6 | .6 |
| Value | \$ 165,105 | \$ 52,996 | \$ 218,101 |
| Value per ton : Gold | \$ 6.37 | \$ 5.20 | \$ 6.09 |
| Copper | \$ 3.68 | \$ 4.00 | \$ 3.76 |
| Silver | \$.45 | \$.45 | \$.45 |
| Gross | \$ 10.50 | \$ 9.65 | \$ 10.30 |
| Gross Value | \$3,853,990 | \$1,136,156 | \$4,990,146 |

In the above calculation the following values were employed:—

Gold, 1 dwt. = \$1.0335, Copper, 1 lb. = 20 cents.

Silver, 1 oz. = 75 cents. One ton = 2,000 lb.

The ore milled in 1917 at Tul Mi Chung amounted to 149,195 tons as compared with 109,765 tons in the previous year.

After treating 283,478 tons of ore, the mill remains in first-class condition and has operated smoothly throughout the year, with an absence of any mechanical difficulties, and, notwithstanding the heavy cost of the reagents found necessary to assist our flotation work, the milling cost shows a decrease as compared with previous years.

The main addition made during the year consists of a re-grinding plant, comprising a ball granulator and a Dorr classifier of the new bowl type. With the exception of machines of this type erected by the Dorr Company for experimental trial, this is, I believe, the first bowl type classifier used at any plant, and it has proved in operation to be an extremely satisfactory addition to our plant.

In spite of the volume of work that has been devoted to it, the gold extraction in the Tul Mi Chung mill continues unsatisfactory, and all efforts are now directed towards effecting an improvement in this respect, details of which results have been given in separate metallurgical reports. In connection with the experimental work that has been done, a completely equipped test cyanide plant has been erected and put in operation under the control of an experienced operator especially engaged in America for this purpose. This plant is a small-sized edition of a cyanide mill of the most modern type, and its operation has afforded us all the preliminary data necessary before designing a plant of sufficient capacity to treat the whole of the current

mill tailing, as well as the tailing stored from previous milling. The results obtained indicate that a cyanide extraction of 70 per cent of the gold now left in the tailing can be expected, with an average consumption of 2½-lb. of cyanide per ton of tailing treated. As already stated, the proposal to erect a large cyanide plant here appears impracticable at present, in view of existing conditions; in the meantime, experimental work is proceeding with the object of increasing the extractions by the means available, and the mill tailing is being saved for future re-treatment.

The Soctarie Deposit consists of an extensive band of quartzite interbedded with limestone of an average thickness of about 25 feet. This band is mineralized with tungsten, gold and copper. The grade of the ore is low, the average of all ore milled to date being approximately:—

| | | | | |
|--------------------------------|-----|-----|-----|----------------|
| WO ₃ (as Scheelite) | ... | ... | ... | 0.3 per cent. |
| Gold | ... | ... | ... | \$0.4 per ton. |
| Copper | ... | ... | ... | 0.4 per cent. |

Although the grade of the ore is low, the large size of the deposit and the increasing demand for tungsten makes it appear that this deposit contains important possibilities.

A great deal of experimental work was carried out both abroad and at the mine, as a result of which the problem of the separation of the concentrate into marketable products was fairly well solved, but on account of the heavy cost of all chemicals at the present time and the very much increased transportation charges now ruling, also the comparatively small tonnage of our output, it was not found practicable to erect a refining plant at the mine, and we could find no Japanese metallurgical works sufficiently enterprising to join with us in taking over and refining our products at anything but most exorbitant rates. Consequently in May, 1917, as complete data had been obtained, it was decided to temporarily suspend operations.

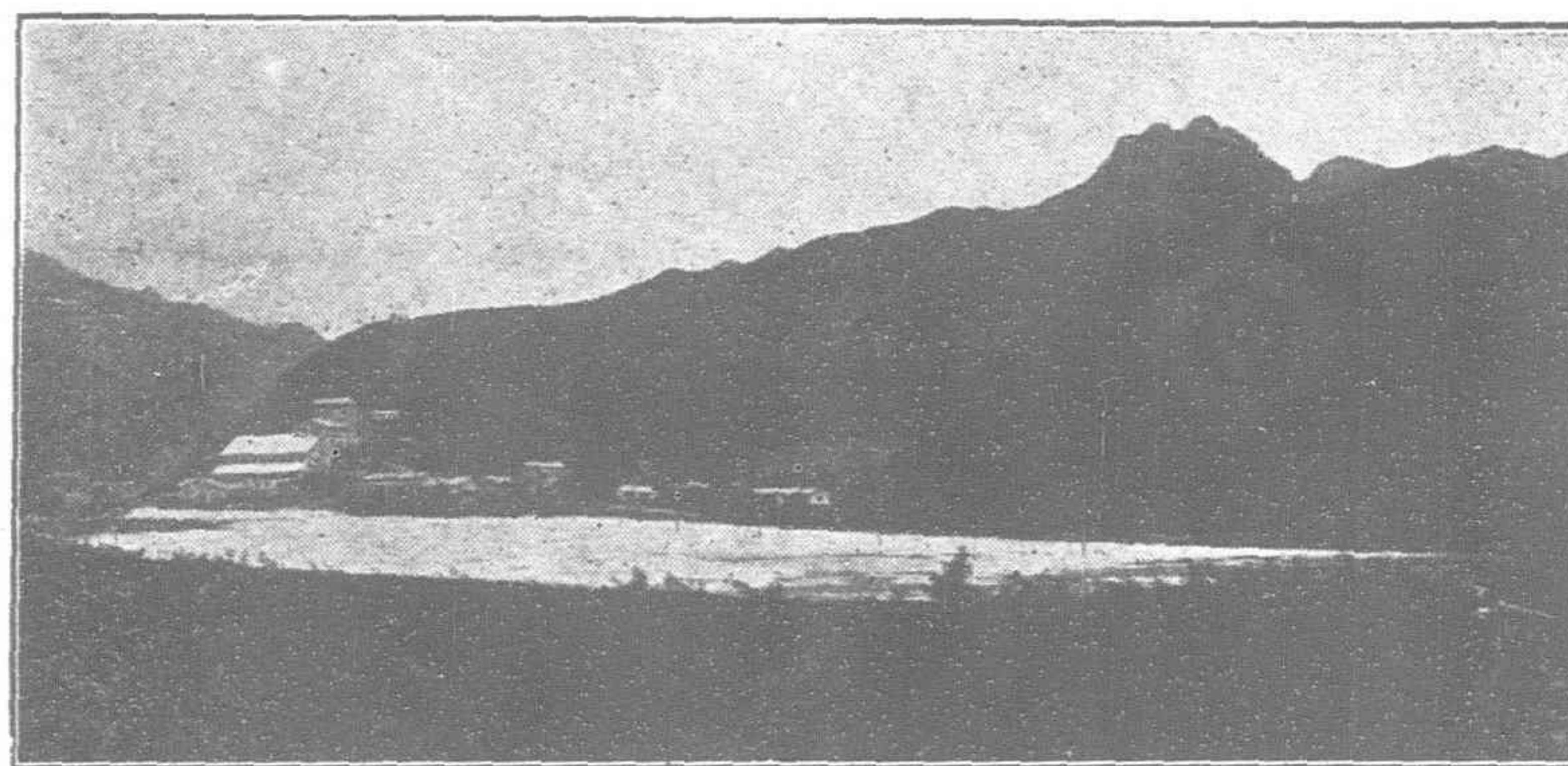
On the closing down of the Suan Mine, the whole milling plant of 40 stamps will be available, and we are now considering ways and means of operating the whole mill on Soctarie ore and spending a moderate amount in improving our transport connections between the mine and mill.

It will be readily seen that the whole proposition is governed by the price we can obtain for tungsten, and if we could depend on receiving anything like the current American quotations, or if more normal freight rates were in operation so that we could ship the whole of our products to San Francisco, where a refining works is contemplated to handle mixed concentrate of the type produced at Soctarie, a very much improved condition would rise, possibly allowing us to consider the erection of a more suitable milling plant to treat the Soctarie ore. However, during the present abnormal conditions all proposals of this nature have been temporarily shelved and we are now considering the question of the bulk milling of this deposit with the means available and under the conditions existing. An agreement has been entered into with Messrs. Hamilton, Beauchamp and Woodworth, Inc., of San Francisco, by which we have obtained the right to use



TUL MI CHUNG—RESIDENCES OF STAFF NEAR MAIN ADIT

their process of treating tungsten ores (believed to be the best and most modern now in existence), and it is hoped that this will prove of good benefit.



ACCUMULATED TAILING AT TUL MI CHUNG

The whole of the power for our operations is generated at our Power Plant, situated on the navigable river which flows into the Port of Chinnampo, and also the Power Plant is in close proximity to the Pyeng Yang railway station.

In view of the constantly decreasing supply of wood fuel available in the vicinity of the mine, and also the serious difficulties which have arisen in the case of companies purchasing electrical power from independent power suppliers, it is a matter of considerable congratulation that this Company is in the position of owning and controlling its power plant.

During the year the supply of electricity was well maintained, and the operating time was at the high efficiency of 98.3 per cent., which included all ordinary stoppages and also one abnormal shut-down due to the theft of a part of the transmission line in the early part of the year.

It is also satisfactory to note that the annual Government inspection of the plant and the tests carried out resulted in a favourable report being written by the Government Inspecting Engineer.

The average cost for the year for power delivered at the mine, over a transmission line of 56 miles, works out at \$0.01175 per K.W.H., which under the existing conditions now prevailing compares very favourably with the results reported at other plants in Korea.

The plant throughout the year has been operated and maintained at a high efficiency which reflects great credit on the whole of the Electrical Staff, particularly considering the abnormal conditions existing to-day.

During the year the Company's Head Office, formerly situated at the Suan Mine, was removed to the Tul Mi Chung Mine, which now forms the centre of our mining operations.

The cost of maintaining the hospitals and Medical Staff on the Concession amounted to \$9,726.67, which is equivalent to 4.5 per ton of ore milled, as compared with \$7,343.15 or 4 cents per ton milled during the previous year. The increase in the cost of nearly all drugs and medical supplies accounts for the increased cost of operation of this department.

Our relations with the Government Authorities continue to be excellent, and the local officials at the mine have shown a sincere desire to treat the Company with courtesy and consideration in carrying out their duties.

There has been recently formed a Society in Korea for the promotion of the Mining Industry, with the object of having the leading companies co-operate in safeguarding and extending mining progress. This Society has adopted the title of the Chosen Mining Association, and includes among its members leading mining and Government representatives, and it is believed that the formation of this Society will do much to bring the various Japanese and foreign mining interests into closer co-operation, and to generally promote the advance of the mining industry of Korea.

The Seoul Mining Company has not failed to do its share as regards the number of its employees who have enlisted for war service, and we note with pride their achievements, and record with the deepest regret the losses sustained.

The Internal Peace Conference at Shanghai

After a lapse of five weeks, the Internal Peace Conference was resumed on April 7. The deadlock, though a most unfortunate incident, was productive of much good which was rather unanticipated. In the beginning, it will be recalled that the Southern Delegation, pressed by circumstances, was disposed to go to extremes, while the Northern Delegation, trying to perform its duty, seemed much misunderstood in Peking. However, the suspension of five weeks produced the beneficial effect of inducing in all those in authority a desire to come to terms without further delay.

Since the resumption of the negotiations the two delegations have been holding all-day sessions, in the morning sitting as a committee of the whole discussing questions in their broad outlines or examining and discussing reports, and in the afternoon meeting in small groups to study questions and draw up recommendations.

The formal session on April 9 was made memorable because each delegation submitted to the other a list of questions the solution of which was considered vital to the establishment of the permanent peace and unity of the country which the Conference is trying to effect. It was reported that nineteen questions were brought forward by the Southern Delegation. Of these, five had been discussed, but not finally disposed of. They were: the cancellation of secret military agreements; the abolition of the National Defence Bureau and disbandment of the troops under its control, the suspension of drawing on the proceeds of the War Participation Loan; no loans to be made or bonds issued before the conclusion of the Peace Conference; and the Shensi Question. No publicity in regard to the other fourteen questions has been given.

The questions which were said to have been submitted by the Northern Delegation included the following:—

I.—REORGANIZATION OF THE ARMY.

- (a) Organization of the troops to be retained.
- (b) Disposal of superfluous troops.
 - (1) Standard and method of reduction.
 - (2) Employment of disbanded troops.
 - (3) Plan of disbandment.
 - (4) Estimate of cost of disbandment.
- (c) Independence of military supplies.

II.—REORGANIZATION OF THE CIVIL GOVERNMENT.

- (a) Separation of Civil and Military Administrations.
- (b) Reorganization of Civil Government in the Provinces.
 - (1) The Province.
 - (2) The *Tao*, or Circuit.
 - (3) Civil service reforms.
 - (4) Development of public instruction.
 - (5) Extension of the police throughout the country.
- (c) Local self-government.
 - (1) District or *Hsien* self-government.
 - (2) Provincial self-government.
 - (3) Promotion of self-government activities.
- (d) Economic Reorganization.
 - (1) Building of national highways.
 - (2) Currency reforms.
 - (3) Abolition of baneful taxes.
 - (4) Removal of restrictions imposed by treaties and usages.

As many of the fundamental questions submitted by both delegations were alike in nature, it was understood that the two lists of questions were combined, rearranged and classified under six different heads. They were entitled the Parliament Question, the Military Question, the Financial Question, the Administrative Question, the Reorganization Question not covered by the preceding questions, and questions which have been taken up but not finally settled.

During the last two weeks very little news has been obtained in regard to the conclusions which the Conference is arriving at. It is said that much progress has been made in the discussion of the military, financial and administrative questions. Although it is hard to make a forecast as to how much longer the Conference will last or whether the rest of its sessions will be marked by the same degree of concord and smoothness, as there may be hidden rocks ahead, it is certain from all available evidence that the two delegations have been making the strongest efforts to solve the knotty problems and that, as sure as the night follows the day, national peace and unity will come ere long.

Chinese Railways in 1918

The Preliminary Report of the Ministry of Communications with Notes on the Year's Railway History and Official Report for 1917

The Ministry of Communications is to be commended for the progressive attitude manifested by the publishing of the 1918 statistics of earnings, an account of which is given at the end of this article.

It will be noted that a new line is included in the 1918 list—the Hupeh-Hunan. This is the northern section of the Canton-Hankow line, which was completed to Changsha during 1917. It is still in the hands of the construction forces, and its earnings will be applied to construction purposes. If this line be eliminated, the total revenues from the combined lines amount to \$75,216.697. This is approximately \$11,666,000 above the earnings for 1917—an increase of 18 per cent. So large an increase under the conditions which have obtained during the past year deserves closer consideration.

In the first place weather conditions were very favorable. Attention will be called to the drought followed by floods in 1917. This depressed earnings in 1917, thus favoring the comparison. To a certain extent, traffic which could not move in 1917 waited until 1918, which actually swelled the volume of 1918 traffic beyond its normal proportions. But 1918 was remarkably free from interruptions due to high water. Rains began early and continued late. But they were of short duration, permitting the surface waters to be absorbed in part and giving time for drainage before another rain followed. This was particularly fortunate, for on the Peking-Hankow repairs to the line had proceeded only partially in restoring the condition prior to 1917 when the rainy season began. At many points temporary track upon low diversion roadbed was still in use, and three days of continuous heavy rain would have washed these away. Luckily none of them suffered and the only water trouble was at entirely new points. One of the most remarkable of these new points of attack was on the Taokow-Chinghua line. This line seems to be located entirely away from water courses. It runs in the same direction as the drainage basins rather than across them. But during the summer it had a serious washout, thus giving another evidence of the whimsicality of Chinese rivers and the impossibility of predicting where they will break out next.

Not only did the manner of rainfall favor continuous traffic but it directly contributed to the volume thereof. Because of the early rains, the first crop was one of the largest of recent years, and the second crop was a repetition of the first. It was gathered with a minimum of damage and was of first-class quality. For a short time the size of the crop threatened to demoralize the market. A very considerable movement of grains occurred in 1917 due to the loss of all foodstuffs in the flooded regions. This ceased entirely. But after a few weeks of hesitation prices became stabilized and a brisk movement began toward normal consumption centres.

Comparison between the 1918 approximate returns and the 1917 actual figures, brings out some important fluctuations upon individual lines. The Peking-Hankow, Peking-Mukden, Tientsin-Pukow, Shanghai-Nanking, Shanghai-Hangchow-Ningpo, Peking-Suiyuan, and Chengting-Taiyuan lines had increases in revenue varying from ten to twenty-five per cent. The Kirin-Changchun, now under complete Japanese management, shows an increase of nearly seventy-five per cent. The increase upon the Chengting-Taiyuan, fully twenty-five per cent., is very interesting when contrasted with the decrease upon the Taokow-Chinghua and the Kaifeng-Honan. Both of the latter lines are also connections of

the Peking-Hankow. The principal class of traffic from the Chengting-Taiyuan to the Peking-Hankow is coal, largely from the Ching Hsing mines. Similarly the principal class of traffic from the Taokow-Chinghua is also coal. While the latter line was interrupted for a period because of the washout mentioned above, the principal disability of that line was the inability of the Peking-Hankow to furnish cars to haul away the traffic delivered to it. The Chengting-Taiyuan apparently was not so badly handicapped. The Kaifeng-Honan also carries a considerable coal traffic brought to it by the Peking-Hankow. Its decrease in revenue of nearly twenty-five per cent. is a serious matter. The Chengting-Taiyuan has operated under peaceful conditions maintained by the model Governor Yen of Shansi. The Kaifeng-Honan has had constant trouble with bandits and soldiers—if a distinction is to be made. One of its conductors was shot by a soldier on orders from an officer who objected to having a first-class fare collected from a companion. There is a rumor also that soldiers so beat the Chinese Director who attempted to protect his line from abuse, that he fled to Hankow. On April 17 occurred the first train "hold up" in China. It took place upon the extension to this line, the Lung-Hai. Several passengers were killed and more were wounded by the rifle fire which was a preliminary, and several others were taken away captive to be held for ransom.

Bandit activities seriously interfered with the Tientsin-Pukow during the Autumn months. The track was torn up several times during the month of September, the mail train was turned back two or three times, and delayed many times while regular soldiers went ahead and drove off the attacking party. One of the stations was seized and looted by bandits during the earlier part of the year. In the south similar trouble was experienced upon the Canton-Kowloon. During February, a robber band demanded \$5,000 from the railway. Failing to receive it, they tore up the track in the vicinity of Cheung Mok Tou. These conditions account in part for the decrease of revenue upon that line.

The decreases upon the Chuchow-Pinghsiang, and the Changchow-Amoy are directly traceable to the domestic war. The earnings upon both of these lines were up to normal during early months, but with the resumption of hostilities during the summer, they fell away to practically nothing. It will be noted that nothing is reported for the Canton-Samshui. This brisk little line with an annual profit of over \$400,000 is in the hands of the Southern party. It may be wondered why the Canton-Kowloon is not similarly seized by the Southern party. This line is a liability rather than an asset. It involves a foreign loan for which the Central government is responsible, hence the foreign officials still make reports to Peking.

The Hupeh-Hunan line, which is reported here for the first time, although badly destroyed by the contending forces of the North and the South, was repaired early in the year. Commercial traffic was accepted in a limited way, but the main activities of the line were principally military service. It is probable that the revenue reported is principally credits for military transportation. What the expenses will be when reported is also an interesting conjecture.

The substantial increase reported by the Peking-Suiyuan is a matter of surprise. That line for two years has been on the down grade in respect to earnings. During the early months of 1918 it was seriously handicapped by plague prevention measures.

During the month of January the line was practically shut down. Measures were gradually relaxed, first by the partial resumption of freight, then resumption of passenger service after quarantine, but it was warm weather before all impediments to traffic were removed. The Peking-Hankow was also affected slightly by these precautionary measures.

The vigorous manner in which the railway lines took up the work of fighting the plague is a matter of congratulation. Comparing the prompt manner in which the epidemic was suppressed with the hold which Spanish influenza has obtained in foreign countries, the population of the larger cities of north China owe a large debt of gratitude to the decision and energy as well as self-denial of those responsible for railway policy. The few thousands of revenue lost by that prompt action undoubtedly saved thousands of lives, and perhaps millions of dollars in business to the mercantile community.

The reservation made with respect to revenue in 1917 must also be made in the case of 1918. Notes of the Bank of China and Bank of Communications, Peking issue, were accepted without restriction during the early months of the year. It soon became apparent that this measure was powerless to raise the value of these depreciated notes. The lines were compelled to pay out silver for materials and supplies and for the most part for wages. There was very little silver coming in from freights and fares. It is easy enough to exchange a single ten-dollar Peking note for silver, but no money changer will handle ten million dollars in that way, and a railway deals in millions. By February the Peking-Suiyuan and other lines began to restrict the use of these notes to payment of fares and forty per cent. of freights. By June the restriction was raised to include all freights. The Peking-Mukden on October 1 refused to accept notes for any purpose. This brought about a very delicate situation upon one section of the line. Tuchun Chang Tso-lin, of Fengtien, insisted that notes should be accepted in the territory under his jurisdiction. The Peking-Mukden had an agreement with the Ministry of Communications to the contrary. The result was that the Ministry of Communications was forced to establish money changers at Mukden, Koupangtze and other stations at which the intending passenger could purchase with notes an order for a ticket. This order was honored at the ticket window, and the Ministry of Communications made up the difference to the Peking-Mukden Railway in silver. This subterfuge, of course, satisfies the foreign interest in the Peking-Mukden, but it does not make money for the Ministry of Communications.

Because of the silver stringency brought on by the acceptance of notes, the Peking-Suiyuan, a line which has always operated at a nominal profit, was forced to negotiate a loan to pay for current supplies. This was accomplished during the closing days of the year. The funds were obtained from Japanese sources and the contract contains the provision that if any financing is required for extensions to the Peking-Suiyuan these interests must have the first chance. While the loan is for only Yen 3,000,000 and can be easily paid off, if real money be collected, yet the straits of the Ministry for ready money are made apparent by its consent to admitting a foreign interest upon this line which hitherto has been the Chinese pride, being Chinese built out of Chinese funds and operated with purely Chinese forces with no foreign supervision.

While the large revenues collected during the year do not represent an improvement in the financial situation of the railways—rather the reverse—they do represent a very substantial increase in the service rendered to the community by the railways. This is fully as important as the actual earnings of the lines. There is little doubt that a similar revenue would have been earned had the collections been made entirely in silver. It is a certainty that the patrons of the lines were in receipt of benefits equivalent at least to what they were willing to pay for them, hence we may conclude that China's travellers and shippers have had the benefit of over eleven million dollars' worth of service more than they had in 1917. Besides, lines like the Shanghai-Nanking have not been affected by depreciated notes. This line was a source of anxiety for some time. Due to severe water competition, its earnings were not sufficient to meet fixed charges. But for three years now

it has been able to overcome that disadvantage and its mounting revenues year by year prove that good railway service can compete successfully with water carriers to the advantage of the community served. The Tientsin-Pukow is similarly answering the question as to whether a line without a large mineral tonnage can be profitable in China.

These results have been obtained under great handicaps. The unsettled internal order has been referred to. The financial uncertainty evidenced by depreciated currency affects volume of trade upon the railway as well as in other lines of business. But in addition there has been a serious shortage of equipment. Due to war conditions in all manufacturing countries it has been impossible to obtain either goods wagons or locomotives. All of the leading Chinese lines have been unable to carry all the freight offered. Go where you will, large stores of grain, coal and other freight are to be found stacked up at stations protected from the weather by matting or tarpaulins, awaiting shipment. Some of this is inevitable following harvest and during the winter months when coal is in greatest demand. In every country the season of "peak" demand finds a shortage of wagons. That some freight sometimes has to wait for some days is not in itself an indication of any damage to the community. A car supply which handled the "peak" load with ease, would be extravagantly large for the average condition during the year. But in China perishable cargo is waiting for weeks and months. Wagons are so hard to get that shippers are forced to patronize the large transportation companies which seem to have peculiar facilities for obtaining wagons when others cannot. These transportation companies are often the private property of high provincial and even national officials. The abuses which are bound to follow are obvious.

Early in the year the Tientsin-Pukow received three hundred wagons of 30 tons capacity each, under the terms of the notorious Hsu Shih Ying contract with a Japanese firm. This contract provides for a rental of \$3.50 and \$4 per day for these wagons for a term of fifteen years. While there is little doubt that at any other time, cars could be purchased for terms very much below these, at the same time the revenue value of these cars has been far in advance of that figure during the past year. Just now these wagons are "a very present help in time of trouble." The shortage of locomotives and of passenger cars is practically as serious as that of wagons. The present supply would not fall so far short of the necessities if railway officials had unrestricted control of it. But the interference of the military is too well known to require more than mere mention. They demand special trains at all hours, requiring the disarrangement of schedules for regular trains. They fail to keep to the hours which they set, and thus cause great delays to traffic on the line which must wait for their passage. They have run special trains from Mukden to Hankow with horse fodder and firewood which could have been purchased at the latter point, and have run the wagons back empty for more, when shipments were standing at every station along the way ready for movement in the same direction. But worst of all, they hold covered wagons at encampments indefinitely, ostensibly so as to be able to execute prompt movements—retreats of course—but actually as living quarters. As living quarters it would be cheaper for the railways and cheaper for China to quarter these soldiers in the best foreign hotels. These cars have a daily earning capacity of about \$14. They contain about 240 square feet of floor space. A much larger room can be rented at the Astor House or the Wagons Lits, with food for one occupant in addition, for \$8. When you consider that between ten and twenty per cent. of the covered wagons of the Peking-Hankow and the Tientsin-Pukow are diverted to this use, it is easy to estimate the limitations which the military place upon the earning power of those lines.

In the field of administration several notable departures are to be recorded for the year. The Peking-Hankow Railway is to be singled out for notice on this point. On March 9 that line opened a railway museum near its quarters on Erh Tiao Hutung, Peking. The purpose of this museum is to exhibit every variety of material used by the railway so that dealers by consulting same may be put in a position to better meet the needs of the line with their wares. About the same time, that line installed at practically every station cases showing the principal products of the country round about. Later in the year an agricultural demonstration

train was run, which carried a band to attract an audience. The audience when gathered was taken through the train, shown improved tools of cultivation, samples of improved seeds, pictures of products which could not be carried conveniently, after which they were entertained by trained agriculturists, who lectured to them upon the principles of selection of seeds, deep cultivation, improved breeds of animals, antidotes for insect pests and kindred topics. While the Chinese farmer probably leads the world in the conservation of soil fertility and the rapid rotation of crops, yet he is very backward in the points covered by these lectures. A line like the Peking-Hankow which derives fully a third of its goods revenue from agricultural products has a very immediate interest in promoting this sort of knowledge. The same line has definitely started upon the project of re-forestation. During the Spring an Arbor Day excursion was run to plant trees along the line. This was largely ceremonial to indicate official appreciation of the subject. But later three definite areas were set aside, a professional forester was engaged, and work is now under way to provide in time the timber required by this line from its own lands.

In conference with the Japanese railways in April, arrangements were made for a through C.O.D. parcels service between the larger cities of Japan and five Chinese cities—Peking, Tientsin, Shanghai, Hankow, and Shanhakwan. Parcels up to 66 pounds may be shipped, charges collect, in either direction. The railways assume full responsibility, attend to payment of customs, and make collections.

For the five years past, the Japanese railways have been doing the work in connection with the settling of accounts between the different lines participating in through passenger traffic. By agreement, it was the turn of the Chinese railways to assume this task, beginning October 1. For five years, similarly, the Peking-Mukden has been the clearing railway making the settlements between the purely Chinese lines participating in domestic through passenger traffic. By agreement it was the turn of the Tientsin-Pukow to take over this work. The occasion was taken by the Ministry of Communications to place all of this work in charge of a bureau entirely independent of any line. This bureau is now known as the Through Traffic Administration and is located in the railway department of the Ministry of Communications. The Director is J. E. Foley who still retains his position as Traffic Manager of the Peking-Mukden Railway which he has held so many years. The immediate accounting work is in charge of J. Lockhart who had charge of this work on the Peking-Mukden. A considerable portion of the original staff connected with this work on that line was transferred to Peking, so that there was very little break in the continuity of the work. In addition, the Through Traffic Administration is charged with the large task of working out ways and means of extending the principle of through traffic to goods service. Questions of likin, interchange of rolling stock exchange, policing and others will make it some time before any very tangible results are to be expected.

During the summer a general traffic conference was held in Peking for a period of three weeks. A great many questions concerned with uniformity of traffic practice were under discussion. The two most important upon which action was taken were the adoption of the metric system upon all lines and a plan for interchange of rolling stock. The so-called French lines now use the metric system, the English lines use the English system of measurements, and the native lines hold to Chinese measurement. This, of course, interposes a serious obstacle to uniform practice. Changes of this sort are difficult to make, for it means a replacement of all instruments of measure, such as rules, scales, micrometres, chains, etc., but most of all it means that officers who have grown up under the one system must learn anew all their standards. A large part of an officer's ability consists of the readiness with which he can decide, mentally, whether or no certain performances are acceptable. This always means mental measurement against some standard already fixed in his mind, and fixed in terms of his habitual system of measurement. For a man in middle life to discard all of these standards and restate them in terms of a different unit is a very difficult matter. Hence it is not surprising that the officers of lines using the English system were somewhat reluctant to make the change. Time is

required to change the various measures and to restate the dimensions of property in place, hence it is pleasant to record that this period of preparation was fixed at only three years.

With respect to interchange of rolling stock the Ministry proposed as a basis of discussion that all of the goods wagons of the standard gauge lines now participating in through traffic arrangements should be "pooled." In other words, it was proposed that wagons under load should go through to destination without transfer of load at junction point, and that when on the rails of a line not owning them they were to be treated as the property of such line. The Ministry proposed by means of reports to keep in touch with the points of greatest demand and to divert wagons to such points in proportion to the need. By such means it was hoped to get more efficient use of the meagre car supply now owned, to avoid a very considerable empty haul caused by the necessity of hauling foreign cars home promptly, and to avoid the delay, cost, and damage due to transfers at junction points. This proposition was met with very determined opposition from the lines which now have a fairly adequate wagon supply. They insisted that it would mean that they would be deprived of their cars to assist lines which had not been forehanded in this respect. A compromise was worked out to the effect that the Ministry might purchase wagons on its own account which might be leased to the various lines in accordance with their needs, and which should be used especially for through traffic. If this plan were acted upon, it would be possible for the Ministry to introduce a standard type of wagon, and it would be possible to gain most of the benefits from a "common use" of wagons without forcing any line to lose control over its individually owned cars. So far the Ministry has not acted upon this plan.

A further step toward uniformity of accounts was taken during the Autumn months, when a committee composed of one of the chief accountants and the adviser to the Standing Committee on the Unification of Accounts and Statistics was appointed to draft a set of uniform station accounting forms with regulations to govern. This committee finished its work before the end of the year. It was not able to report until sometime later, but a final report has now been adopted by the Standing Committee, and a set of forms and regulations has been passed to the Minister of Communications for approval. It appears that the accountants upon the Government railways have been able to make much faster progress toward uniform practice than have officers in other branches of the service. This is to be expected, however, for the revision of accounts can be made at relatively little expense.

Construction during the year was practically nil. Early in the Spring a surveying party was sent out by the Siems-Carey interests to run a line into Szechuan. A route with only one per cent. ruling grade was found via the Han River. This in itself is a valuable contribution toward future construction. But at the borders of Szechuan bandits were encountered to such an extent that future work was impracticable. The chief engineer, G. A. Kyle, was captured and held for ransom several weeks. Along with him the bandits took \$13,000 in silver, and two companions. Of contracts for new construction there was a multitude, all with Japanese interests. To discuss these in any way would be to enter the subject of international politics.

Preliminary Report for 1918

The approximate traffic return on lines in 1918 has been announced as follows:—

| Name of Line | Operating | | Net Operating Revenue | Income | | Net Income Debits | Surplus (or Deficit) for the year |
|---------------------------------|--------------------|---------------|-----------------------|---------------|--------------|-------------------|-----------------------------------|
| | Revenues | Expenses | | Debits | Credits | | |
| Peking-Hankow ... | 18,750,636.11 | 7,009,225.63 | 11,741,410.48 | 3,800,685.14 | 94,537.64 | 3,706,147.50 | 8,035,262.98 |
| Peking-Mukden ... | 16,996,642.09 | 6,529,967.69 | 10,466,674.40 | 760,190.52 | 605,128.13 | 155,062.39 | 10,311,612.01 |
| Tientsin-Pukow ... | 10,560,944.92 | 5,378,013.14 | 5,182,931.78 | 3,975,882.02 | 54,066.41 | 3,921,815.61 | 1,261,116.17 |
| Shanghai-Nanking ... | 4,179,808.68 | 4,203,245.60 | 1,976,563.08 | 1,207,888.12 | 68,664.01 | 1,139,224.11 | 837,338.07 |
| Shanghai-Hangchow-Ningpo ... | 2,170,110.54 | 1,761,839.52 | 408,271.02 | 584,263.58 | 107,715.75 | 476,547.83 | less 68,276.81 |
| Peking-Suiyuan ... | 3,718,001.68 | 2,548,202.39 | 1,169,799.29 | 391,168.15 | 45,524.99 | 345,643.26 | 824,156.03 |
| Chengting-Taiyuan ... | 2,527,620.85 | 1,284,966.54 | 1,242,654.31 | 555,351.03 | 22,157.61 | 533,193.42 | 709,460.89 |
| Taokow-Chinghua ... | 936,263.23 | 385,798.06 | 550,465.17 | 410,835.74 | 129.33 | 410,710.41 | 139,754.76 |
| Kaifeng-Honan ... | 1,365,622.90 | 632,646.91 | 732,975.99 | 586,312.53 | 22,258.96 | 564,053.57 | 168,922.42 |
| Kirin-Changchun ... | 1,087,170.26 | 754,273.67 | 326,896.59 | 265,596.32 | 56,523.26 | 209,073.06 | 117,823.53 |
| Chuchow-Pinghsiang ... | 611,086.75 | 502,916.99 | 108,169.76 | 18,908.85 | 4,242.67 | 14,666.18 | 93,503.58 |
| Canton-Kowloon ... | 924,673.43 | 967,341.81 | less 42,668.38 | 620,015.63 | 18,531.88 | 601,483.75 | less 644,152.13 |
| Canton-Samshui ... | ... (Not reported) | | less 31,004.32 | 126,869.29 | 1,546.93 | 125,322.36 | less 156,326.68 |
| Changchow-Amoy ... | 51,122.23 | 82,126.55 | less 31,004.32 | 126,869.29 | 1,546.93 | 125,322.36 | less 156,326.68 |
| Chinese Government Railways ... | 63,873,703.67 | 30,040,564.50 | 33,833,139.17 | 13,303,971.02 | 1,101,027.57 | 12,202,943.45 | 21,630,195.72 |

Official Returns for the Year 1917

The Ministry of Communications announces that the returns of the Government railways applying to the year 1917 have now been completely tabulated. Since the time required for printing and translation will be considerable, a preliminary statement embodying the more essential results is given to the press in advance of the full report. The table on this page condenses the returns of revenue, expense, and income debits and credits into a single statement.

The Canton-Samshui line has made no report because it is in the hands of the Southern authorities. In spite of this, revenues show an increase of \$1,111,983.45 compared with the year before. This is remarkable in view of the fact that from July 27 to October 29 through trains could not be run on the Peking-Hankow line, due to washouts, and that from August 8 to November 26 the north end of the Tientsin-Pukow with considerable equipment, was cut off similarly. Other lines were also interrupted more or less by floods. And on all the northern lines there was considerable embarrassment to traffic due to military manœuvres following the attempted Imperial restoration.

These various causes so increased operating expenses that as a result, net operating revenues decreased slightly—only \$86,303.13. But income debits decreased \$663,974.90—due principally to the favorable rate of exchange for interest payments—and income credits increased \$325,768.68 so that the final surplus for the year is \$903,440.45 higher than in 1916.

Income debits are explained to include interest, taxes, discount on depreciated currency, losses by exchange, rents and similar payments. Income credits conversely are rents, gains from exchange, bank interest and similar accruals.

Three full years are now available for comparison under the Uniform Classification of Accounts. The final surplus for each of these years is as follows:—

| | Surplus. | Increase over 1915. |
|------|-----------------|---------------------|
| 1917 | \$21,630,195.12 | 11,958,661.05 |
| 1916 | 20,726,755.27 | 11,055,220.60 |
| 1915 | 9,671,534.67 | — |

The surplus remaining after all charges for the year had been paid in 1915 was equivalent to nine per cent. upon the investment made by the Government in these lines. In 1916 it jumped to over 17.7 per cent., and in 1917 amounted to 18.8 per cent.

If net operating revenue be divided by the investment assets, by lines, the return earned upon the investment is as follows:—

PER CENT. RETURN ON INVESTMENT.

| Name of Line | Net Operating Revenue | Investment Assets | Per Cent. Return |
|-----------------------------|-----------------------|-------------------|------------------|
| 1.—Peking-Hankow | \$11,741,410.48 | \$99,132,800.40 | 11.8 |
| 2.—Peking-Mukden | 10,466,674.40 | 61,139,874.01 | 17.1 |
| 3.—Tientsin-Pukow | 5,182,931.78 | 100,181,965.82 | 5.2 |
| 4.—Shanghai-Nanking | 1,976,563.08 | 30,536,757.02 | 6.4 |
| 5.—Shanghai-Hangchow Ningpo | 408,271.02 | 21,869,393.10 | 1.9 |
| 6.—Peking-Suiyuan | 1,169,799.29 | 26,461,744.31 | 4.8 |
| 7.—Chengting-Taiyuan | 1,242,654.31 | 22,011,968.21 | 5.5 |
| 8.—Taokow-Chinghua | 550,463.17 | 7,306,484.01 | 7.5 |
| 9.—Kaifeng-Honan | 732,975.99 | 13,422,206.50 | 5.4 |
| 10.—Kirin-Changchun | 326,896.59 | 6,556,071.89 | 4.9 |

PER CENT. RETURN ON INVESTMENT (contd.)

| Name of Line | Net Operating Revenue | Investment Assets | Per Cent. Return |
|------------------------|-----------------------|-------------------|------------------|
| 11.—Chuchow-Pinghsiang | 108,169.76 | 4,808,850.27 | 2.2 |
| 12.—Canton-Kowloon | less 42,668.38 | 15,534,626.15 | less |
| 13.—Changchow-Amoy | less 31,004.32 | 2,643,031.27 | less |

\$33,833,139.17

\$411,605,772.96

8.2

Operating ratio for the year increased slightly over 1916, but is still only 47 per cent. compared with 53 in 1915. Compared with foreign countries, this is a very gratifying result, as will be seen from the following comparisons:—

| | | | | |
|--------------|-----|-----|-----|--------------|
| Austria ... | ... | ... | ... | 75 per cent. |
| France ... | ... | ... | ... | 63 " |
| Germany ... | ... | ... | ... | 70 " |
| India ... | ... | ... | ... | 52 " |
| Japan ... | ... | ... | ... | 48 " |
| U. S. A. ... | ... | ... | ... | 69 " |

(Bulletin, No. 100 Bureau of Railway Economics, Washington, D.C., U.S.A.)

The Operating ratio upon the several Government lines in 1917 was as follows:—

| | | | |
|-------------------|------|-----------------------------|-------|
| Peking-Hankow | 37.4 | Peking-Suiyuan | 68.5 |
| Peking-Mukden | 38.4 | Kirin-Changchun | 69.7 |
| Taokow-Chinghua | 41.3 | Shanghai-Hangchow-Ningpo | 81.2 |
| Kaifeng-Honan | 46.3 | Chuchow-Pinghsiang | 82.3 |
| Chengting-Taiyuan | 50.8 | Canton-Kowloon | 104.6 |
| Tientsin-Pukow | 50.9 | Changchow-Amoy | 159.5 |
| Shanghai-Nanking | 52.8 | Chinese Government Railways | 47.0 |

In gauging the above results, one reservation must be borne in mind. Upon the Peking-Hankow, the Peking-Mukden, the Tientsin-Pukow and the Peking-Suiyuan, revenues contain a considerable quantity of Peking notes of the Bank of China and the Bank of Communications. These are included at par value. On the other hand, expenses were paid largely in silver.

The Latest "Limelight"

"In the limelight" survives as a theatrical phrase, but it has become a metaphor instead of a statement of fact. There is very little actual limelight in theatres or anywhere else to-day. The electric arc lamp superseded it many years ago and became standard practice for cinematograph work. Now the arc lamp itself is threatened with extinction by the incandescent electric lamp of the "gas-filled" type. In this lamp a filament of tungsten wire is used in a bulb filled with argon, the inert gas whose presence in an atmosphere was discovered by the late Sir William Ramsay. The filament is wound in a close spiral and gives a small but intensely brilliant source of light which, by means of suitable reflectors, can be used to great advantage in projection work. The latest advance in this direction comes from a British firm which has produced a lamp in which the filament is wound in conical form. This gives practically a solid disc of light which can be very easily and accurately focussed so as to throw no shadows on a cinematograph screen. As the wire is held in shape by its own stiffness it has to be made thicker than usual and is, therefore, unsuitable for voltages above 20. Where alternating current is available, a small transformer can be put in to give this low pressure. In laboratories, where low pressure circuits from secondary batteries and other sources are at hand, this lamp is ideal for microscopic and other projection work. It gives an absolutely steady light and involves no trouble in the way of changing carbons, as has to be done with the arc lamp. Great interest has been aroused by this improvement among scientific circles in Great Britain.

The Story of the Jade Industry

[By P. T. LAU, M.B.A. (HARVARD), PROPRIETOR OF KWONG SHANG CHEUNG JADE SHOP, CANTON, AND SOMETIME INSTRUCTOR IN BUSINESS ADMINISTRATION, CANTON CHRISTIAN COLLEGE.]

The word *yu*, or jade, is found in the most ancient literature of China. From time immemorial jade has been regarded not only as a precious stone, but the most precious of jewels. We are told that kings were wont to exchange cities or towns for a mere piece of jade. Evidently the people of China must have discovered the art of carving jade long, long ago and jade must have been one of the most ancient commodities of trade of China.

Kinds of Jade

Generally speaking, jade is of two kinds: white and green. The latter is used much more commonly as jewellery, while the former is used solely to make bracelets for men (in China some men wear bracelets) and for large decorative articles, such as vases, art objects, "artificial mountains," and the like.

With regard to the source of supply of the raw materials, Burma produces the rock or ore for green jade, and Turkestan the rock for white jade. The greater bulk of white jade is manufactured in Peking and Shanghai, and a comparatively small amount is worked up in Canton. White jade is rarely used by women for jewellery and so its value is considerably less than that of green jade.

Green Jade Industry

As for green jade (hereafter whenever the word jade is mentioned, green jade will be meant), Canton dominates as the centre for its production. It would not be an extravagant claim to say that 90 per cent. of the whole bulk consumed in the country and exported to foreign countries is produced in Canton.

Canton sets the style for many articles and it is exceedingly difficult for workmen in other parts of the country to copy it, even if they possess the skill, because there is no standardized machinery nor tools for performing the various operations. Likewise it is the case with the Shanghai styles, which can hardly be copied in Canton. The main reason for this is, perhaps, that the workmen are conservative and ignorant. They do not want to break their habitual way of doing things. Their muscles have become as parts of machines; whenever something new is to be done, it deranges the whole machinery. Accordingly the labor cost would be much higher if the Canton workmen were to copy the Shanghai style, or vice versa. The same reason may be assigned for the higher cost of articles intended for export trade. On the whole, the Canton workmen are more skilled than those of Shanghai, because in the latter place the unions or guilds are not as well organized and, consequently, many women and other forms of cheap labor are employed in the work shops.

Importing the Jade Rock

Normally Canton imports about Mex. \$4,000,000 worth of jade rock annually from Burma, although according to the customs reports the importation for the last few years has been declining. This importing business is handled by seven houses. They all buy direct from Burma. Their profits and losses depend entirely upon the skill and good judgment of the buyer. Hence the buyers for these houses are usually the owners or important partners. The tax at the quarries is about 60 per cent., and the transportation costs amount to about 40 per cent. more. Thus if a house pays \$50,000 for its rock at the quarries, the cost delivered in Canton will amount to \$100,000. The time for quarrying is about May, as this is the dry season of the year.

Jade Rock Market in Canton

Once a year the rock market in Canton is open for the selling of the rock imported. The time is usually at the beginning of the year (old style calendar), somewhere around the latter part of the first month. The amount of rock to be disposed of determines how long the sale will last. Purchasers may consist of manufacturers, shopkeepers, and even workmen themselves. The whole year's supply is to be sold at this one season. The main reason is that the houses want to sell their entire stock before the purchasers have a chance to cut up the rocks, for if some of these purchasers should strike bad bargains it would discourage further buying. Besides, it is the "psychological" season for buying and selling, because everybody is starting business anew.

Selling Practices

It may be interesting to note the system of sales adopted by these importing houses. The rock on sale is put on exhibition in rooms of the importing houses one day ahead of the sale and each place is numbered. A small portion of each piece of rock is cut to expose its interior color. Prospective purchasers inspect these rocks and note the pieces they want to buy.

The system of secret bidding is used at the sale. The seller or *sin sang*, as he is called, stands in the middle of the hall, wearing a coat with extra long and wide sleeves. When the number of the piece of rock for sale is announced, the buyers rush up to this *sin sang*, grasping his hands under his sleeves to give their bids, talking price with their fingers. The *sin sang* has a remarkable memory: not only can he talk price with both hands at the same time, but he is able to remember every number and the price of every piece of rock on sale. When he thinks that he has secured a good price he shouts out the name of the bidder who is entitled to that particular piece of rock, without waiting for further bids. Therefore every buyer has to fight hard for a chance to present his bid first. The *sin sang* is usually a big and strong man physically, for he must withstand the rushing crowd of buyers trying to grasp his hands, crushing and squeezing him!

The bid thus taken is not final, but is subject to the review of the proprietor, who has the right, according to custom, to reject any bid in case he thinks the price is too low for that piece of rock. Except when the sale is concluded, no prices of bids are announced. The *sin sang* cannot show any favoritism or discrimination, since as soon as the price is made public bidders will find out why their bids have been rejected or accepted.

Occasionally a sale is held in the ninth month, that is, prior to the New Year sale, if the importers desire to realize some money earlier. But this sale is always on a smaller scale and less exciting.

Organization of the Jade Industry

There are usually about one hundred customers or buyers at the sales conducted by the importing houses. As I have mentioned, among them may be manufacturers, shopkeepers, or the workmen themselves. Anyone who has the capital and confidence in his ability to determine the value of jade may buy rock and send it out to contractors to be cut into whatever he wishes. The color and quality of the jade determine what is best to be cut out from it. No contractor or workman dares to steal anything out of a piece of rock entrusted to him, because there is a careful system of inspection and weighing, and if any dishonesty be proved the offender would be blacklisted at once.

The contractor or industrial organizer owns the workshop and the necessary tools. He goes around to solicit orders and hires men to work for him. The workmen are paid a piece rate. Earnings are divided so that the contractor gets 60 per cent. and the workmen 40 per cent. For example, if a job nets the contractor one dollar, he gets sixty cents and the men who do the work get forty cents. Out of his 60 per cent. of the earnings the contractor has to provide the place for the work, the tools, and the food and lodging for his men. It goes without saying that he has to solicit the orders.

Jade Workers' Trade Union

There are some 10,000 workmen engaged in the jade cutting industry in Canton. They are organized into four trade groups or unions namely: (1) the cutters, (2) the bracelet makers, (3) the plain carvers, and (4) the "flowery" or ornate carvers. Workmen in the last mentioned group are highly specialized and get good wages, i.e., about \$1 per day, while men in the other trade groups get about 40 cents per day.

These unions are exceedingly powerful. They can do about as they please and the employers or contractors have no control over them. Systematic "soldiering" or loafing on the job is openly practised. One who visits the workshops cannot help but be impressed by the numbers of vacancies or absent workmen. They go out for a walk or to take tea, perhaps once in every hour. If one were to calculate each man's working day, it probably would hardly amount to two hours of solid work, and yet the men are supposed to be at work from early morning till nine at night, with rest periods at meal hours. They calculate to earn only a certain sum per day and when that minimum is reached they work no more. Of course, at the same time they see to it that their employer does not make too much money but just enough to warrant his continuing in business.

Rigid rules are in force governing apprenticeships. No one is permitted to work on any kind of a job without first being a graduate apprentice. Apprenticeship for cutters is set at three years, while the term for the bracelet makers and the carvers is four years. During the period of apprenticeship the apprentice is fully under the control of his master. Whatever he earns goes to the master. In return the master takes care of him, providing him with food and clothing, besides teaching him the trade. The apprentice generally does the rough work and his master applies the finishing touches. Upon graduation the apprentice must join the union by paying an initiation fee of about \$10.

There are no terms in English to express accurately the different agencies handling the jade trade from the purchasing of raw materials to the retailing of the finished products. The industry does not lend itself readily to description in terms of conventional business organization. The reader must stretch his imagination somewhat in order to understand the entire organization. The manufacturers, as I call them, are not manufacturers in the real sense of the word. They are merely buyers of rock from the importing houses, but they neither own factories nor employ workmen. Contractors really do the work of manufacturing. Neither is the jade exchange a wholesale market, although manufacturers sell their products here, because retailers also dispose of their products in this same place. One may even buy from one booth or stall and sell what he has just bought at the next booth in the same exchange, for it is impossible to determine the value of jade exactly. In many cases even the expert jade dealers do not agree on their valuations.

Jade Exchanges

There are two jade exchanges in Canton, both located in the west suburb of the city. Each is open every morning from 6.30 to 10.00 o'clock. Each seller rents a place or booth in the exchange in which to display his goods. One of the exchanges handles goods of superior quality and the other the goods of inferior quality. However, a seller in either exchange usually exhibits his inferior articles and only when you request or when he recognizes you as a "real" purchaser will he show you his good jade articles. The system of talking prices secretly is also practised here as in the jade rock market. Thus no one except the actual purchaser knows exactly how much the seller has charged or has paid for an

article. In these exchanges only a professional can expect to get a good bargain. A layman buying here will surely "pay too much for his whistle." He cannot hope to strike a good bargain and it would be much cheaper for him to buy from a reliable retail store.

Retail Shops

As to the retail business in this trade, there are about forty stores in Canton, mostly located on Tai San Street in the New City. The average store employs about seven persons and does an annual business of about \$20,000. The success of such a business depends almost entirely upon the purchasing agent who is usually the manager or the head of the store. The expenses in the business amount to about 20 per cent. Accordingly, 25 per cent. on cost is the usual mark-up of the "one-price" stores. There are some half dozen one-price stores in the city. Other stores, of course, charge what the customers can or will pay.

There are two kinds of one-price stores. One is called the "true one-price" that is, it charges exactly the price marked. The other is called the "discounted" one-price, that is, it gives a discount from the price marked on all articles to every customer. For example, if the article is to be sold for 70 cents, it will be marked at \$1, and a discount of 30 per cent., or 30 cents will be given. This extra mark-up may vary all the way from 30 per cent. to 50 per cent. Some stores have followed this system for so long that it is hard for them to change over to the "true one-price" system, because their old customers all expect such discounts when making purchases.

Tourist Trade

When a visitor or foreigner is taken to a store by a guide it is customary for the guide to get a 20 per cent. commission from the store. Hence it is necessary for the store to add this extra on to the selling price to cover such commissions. Formerly the commission was only 10 per cent., but the guides are so powerful that they can now demand almost anything from the stores. The stores are largely dependent upon the guides for the tourist trade, and visitors will not buy from stores that are not favored by the guides and, in fact, buy wherever the guides take them. This accounts for the high prices that tourist and visitors have to pay in making their purchases. As a matter of fact none of the "one.price" stores realize any extra profit whatever from these visitors. If the tourist is charged too much it is because the guide is exorbitant in his demand upon the shopkeeper.

The stores have found it almost hopeless to remedy this situation, because the guides are well organized and have spent quite considerable amount of money to get their jobs. On the other hand, competition among the stores is very keen, and if one store does not give a guide what he wants he will take customers to one where he can exact better terms. The guides also demand (and get!) other privileges, such as premiums on exchange of other kinds of money into Canton local silver, premiums on drafts, etc.

Jade Products

The class of articles being made from jade has been changing in recent times. Formerly the Chinese officials consumed large quantities of jade in the form of thumb rings, of tubes for feathers attached to the official hats, of snuff boxes, etc. Nowadays the most popular articles are ear-rings, bracelets, finger rings, and pendants, while beads, cuff buttons, necktie pins, and charms are among the most common articles prepared for export.

On the whole, the jade industry is one of the most interesting in China. It is an industry that is truly Chinese. It illustrates in a striking way the methods of business organization and industrial trade unionism that have been developed in China. Business is carried on under highly competitive conditions with a small margin of profit. The power of organized labor is shown at its highest. The industry is a complex one, carrying on its activity on an international scale. It is only one of many such industries in China whose stories are yet to be told to the outside world.

One wonders to what extent these Chinese industries will be modified when in longer contact with western trade influences and the knowledge of western business methods.—"The Chinese Social and Political Science Review."

Chinese Education

Its Result on the Individual and the Community

BY GERALD KING.

Many people wonder why China is in its present condition. Things seem as bad as possible. Here is a large country, with a steady trade, enormous undeveloped mineral resources, an abundant and hard-working population, and excellent waterways, reverting to the condition of Europe in 1300. Why?

Before the revolution of 1911, scribes of the Young China party were fond of descanting on the iniquity of an alien dynasty, on the apathy of the Manchus and their indifference to progress, on the absurdity of a system which included eunuchs, and on the rapacity of those in high places. Fortunately for us, few of us have our wishes granted. Young China succeeded in overthrowing the Manchus, and since then we have all learnt something.

The Revolution can hardly be called a genuine revolution. It was a flabby, ill-directed movement, with no strong man in it, which would have been crushed in twenty-four hours by the feeblest of governments. But it came at a time when the Manchu fortunes were at such a low ebb that they could not spare any time to govern at all. That short-sighted old anachronism the Empress Dowager (if we may be allowed to speak thus of a lady who has received the approbation of Mr. J. O. P. Bland) delayed her death at least twenty years too long, and when she died deprived the act of any salutary consequences by purposely leaving the Manchus divided among themselves. The Court, composed of two weak parties weakly led, squabbled with that blend of obstinacy and cowardice so consistently adopted by their successors. In that position, only a push was needed to send them over, and by bad luck they got that push. They fell: but hardly had they fallen when it became apparent that the victors only represented a three-century-old wish that China should be governed by the Chinese. They represented no party and no policy, and success speedily divided them among themselves. Yuan Shih-k'ai proved a terrible ally who swallowed them up with the facility with which a heron swallows a frog.

Where are they now? How many people can remember the names of those regenerators of China?

Since the death of Yuan Shih-k'ai the country has been ravaged by the Peking Government in the North and by the Canton Government in the South, while hordes of lesser bandits roam from village to village leaving a trail of horror and destruction behind them. Why does this happen? Why has not one man made good from among all the Northern politicians and generals, the Southern politicians and generals, and the thousand and one enthusiasts who have a patent medicine to put things right in their pockets? Why is there no virtue in any of them?

Because they have all gotten hold of the wrong end of the stick. They have been educated in China, or, if they have not been educated in China, they have only had a foreign roof put on their Chinese house. They all bear the imprint of the system which has rotted China for a thousand years. Experience has shown that no brain can go through a Chinese education and survive. When a European takes up the serious study of Chinese in middle life, after the tonic of a proper foreign education, the result is still shocking. Look at our sinologues. Chinese of unusually strong character were less warped than the rest, provided that they were early drawn from their studies by a life of action and then kept too busy to return to them. But those who had the leisure continued all their lives at them and became mental cripples of the most self-complacent kind.

Most of us can remember, under the old régime at least, one or two Chinese officials who were gentlemen: courteous, affable even honest. But they left no work behind them; and when periodically they broke out into some grand pyrotechnic display of learning in a Memorial to the Throne, the reasoning showed that they had only progressed to about 1350 A.D.

The Chinese educational system does not include facts. Nay, more, the Chinese educational system dodges facts. Where every other system teaches that the fact is the thing which counts in life, and the more disagreeable the fact is the more likely the remembrance of it is to do good, in China the fact is avoided. The purely Chinese educational system hates facts; usually it misses them altogether, and when it does get into such a corner that a fact has to be faced, the fact gets so badly damaged in the encounter as to be useless afterwards. It inculcates in the student a dreary cynicism about facts and teaches him to divide his life into two parts, in one of which he talks, writes, and argues, and in the other of which he thinks and acts.

Let us see what the average Chinese learns. Practically all the Chinese start on the Three Character Classic. This is a short essay, written nearly seven centuries ago by Wang Po-hou, and arranged with three characters in each line. It is a rich mine of misinformation. It starts by asserting that man is born good, and becomes bad: whereas he is born middling, and usually continues so. Really good and really bad children, like really good and really bad men, are rare products. From this start it goes through a number of the tedious allusions in which the Chinese delight. Chinese literature abounds in children even more tiresome than George Washington, and a fair number of these are duly quoted. The little Jung, who at the age of four gave up the pear he wanted, is a probably a fair representative of a disagreeable class. After these Wang embarked on a rapid and inaccurate survey of the world. There are five constant virtues, six kinds of grain, six domestic animals, seven human passions, eight distinctive sounds, nine degrees of kinship. Follows a sketch of the Classics, and a resumé of history up to the period of the writer, which leaves the student with a gap of 600 years between the last thing he knows and his own time, instead of the lesser gap of 100 years or so which in England is inserted to prevent history becoming useful. Another outbreak of infant phenomena follows, and the work ends with a warning against idleness. The Chinese child is guarded against much of the mischievous nonsense contained in this work by the fact that it is not usually explained to him. He has only to learn it by heart: that the sounds have a meaning, and that this meaning may be right or wrong, is not considered. He can, in moments of stress, assert his claim to education by repeating a few stanzas: and no one in the audience would be so ill-bred as to enquire whether he understood them. If, after learning the Three Character Classic, his parents can afford to keep him at school, he is launched on the Thousand Character Classic. The Thousand Character Classic is a great monument to the Chinese love of nonsense for its own sake. It was written nearly thirteen centuries ago, in a single night, and the merit of the composition lies in the fact that no word is used twice. To achieve this, the sense had to go. It is well worth reading, as it gives an idea of what a man can do when put to it, and no one can understand Chinese mentality unless he reads it through and realizes that the Chinese have been brought up to admire and respect this tosh. Specimens are something like this:—

The sea is salt, the river sweet,
Fish swim, and birds on wing are fleet.

Of course, if the man who wrote it was right in assuming that his audience needed to be told things like that, he was right to write drivel.

Like arrows, years fly swiftly by,
The sun shines brightly in the sky.
The starry firmament goes round,
The changing moon is constant found.

going on to finish with these memorable lines:

Four words which give a sentence force,
Are really, so, indeed, of course.

These quotations are taken from Professor Giles' translation.

Unless the boy is of a well-to-do family, or means to become a scholar, his education probably ends there. He has learnt nothing: a few names, a little history of a kind, and a few moral maxims with nothing to back them. This has something to do with his later attitude to life. Most Chinese are ready to discuss ethics, or to cap sententious moralities by the hour: but their memories never influence their actions. A Chinese sends a pair of moral scrolls with a bribe, and a clumsy or insufficient offer would be received with crushing righteousness. The Chinese have to learn their facts away from books, and so books are for them like Morality Plays: interesting, loveable, learnable, but not of this world we live in: a recreation, a pleasant dream, but having no connection with life, and no help to give in solving its difficulties. This is not always the case. There are Chinese who sedulously try to put into practice the precepts they have been taught. But to the vast majority, their education has only left them with the same impressions that would be left on an American youth whose ideas of life were solely based on the *kinema* plays he had seen were he suddenly to be transplanted into the office of Jew stockbroker on Wall Street. He would find that the world as he had imagined it, and the world as he found it would not mix. So the Chinese starts life with no real education at all: and the more shrewd he is naturally, the more likely he is to be driven to an unprofitable cynicism by the conclusion that the morality he has been taught to admire, and the codes which have been placed before him are, after all "but bugges to frighten babes withal."

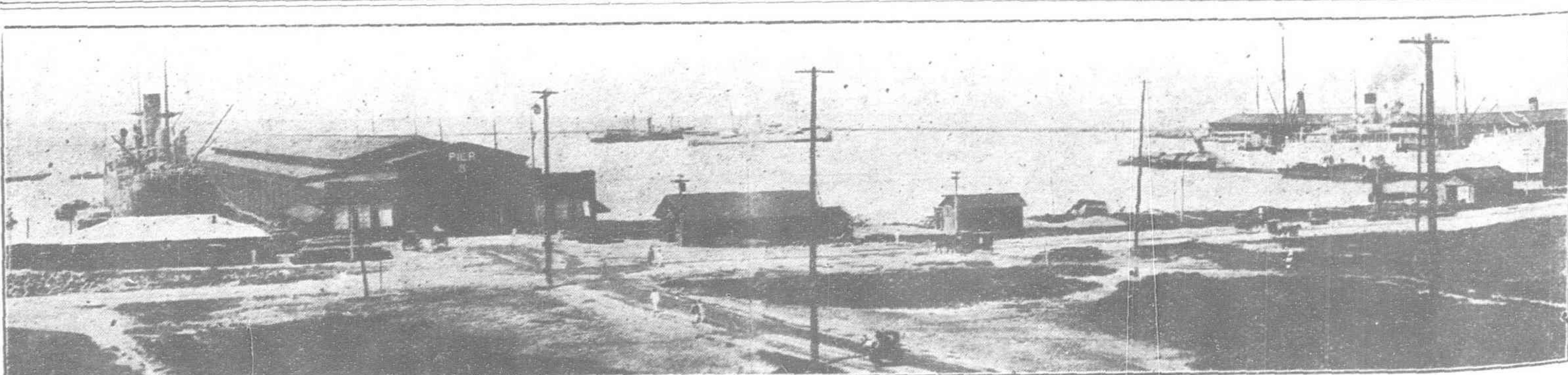
Concrete Ship Building in Great Britain

There are now ample signs that although Great Britain made a somewhat late start in the field of concrete ship construction she has founded the industry on a scale which promises to give it the first place in this branch of the shipbuilding art. The use of concrete in place of steel or wood for the hull of a ship, is by no means new; many years have indeed elapsed since the first boat built on this system was put in service with satisfactory results. Early examples of the concrete vessel were mainly engaged in harbor work or in coastwise passages, but proof has been recently given by what has been done in the United States and in the Scandinavian countries, that the concrete ship can successfully withstand the stresses experienced in ocean service, and that for certain requirements, vessels in this class have advantages over the steel ship. The whole subject has been investigated by the technical officers of the great classification societies, and the decision to include the concrete ship in the registers of Lloyds and other similarly constituted bodies indicates that there is a permanent place for it in the fleets of the great shipping companies.

If only a recent comer in this field, Great Britain set about the task of laying the foundations of the new industry with characteristic thoroughness, and is now in a position to make

a larger output of concrete ships than any other shipbuilding nation. The announcement that a sea-going tug has been launched at Barrow or that three 1,000-ton concrete barges were put into the water at Shoreham, convey but an inadequate impression of the capacity for output of the twenty yards which have been established in various parts of the country. The river Thames, which had ceased to be a shipbuilding centre, has now five concrete ship yards in operation; there is a great establishment at Poole Harbor, another at Barnstaple, yet other establishments on an extensive scale in Lancashire, on the east coast of Scotland, on the Clyde, the Tees, the Severn and elsewhere. Backed as the industry has been by the British Admiralty, these establishments have been laid out and equipped on the most modern lines, and ought to be in a position to construct concrete ships at costs which should compare favorably with those obtaining elsewhere. The first set of contracts placed with the new yards included over 50 ocean-going tugs ranging up to about 750 h.p., and designed for barge towage service, and some 150 barges of 1,000 tons capacity, as well as a number of smaller barges and lighters. The decision to embark on these particular types of construction was the outcome of special transport needs arising out of war conditions and it may be stated that the barges already delivered and put in service have proved eminently satisfactory for the purpose intended, which was service in the near continental trades. Although primarily undertaken as a war expedient to reinforce tonnage without diverting labor from the ordinary shipbuilding yards, the scheme has not only enabled a new branch of shipbuilding to be established on a sound basis, but has enabled sea-going experience of concrete construction to be accumulated which should be an important asset to the British yards when they take their place in the industry under ordinary competitive conditions.

Those who have had an opportunity of visiting the British yards realize that these are no mere war-time projects which are to be allowed to grow derelict when government orders have been executed, but that they have been planned as permanent enterprises and designed with the object of accepting orders for the construction of reinforced concrete ocean-going ships of large size and draft. Some of the larger establishments have been equipped with the intention of laying down ships of 10,000 tons, and will be prepared to submit designs and undertake contracts for the construction of ships of this character at a comparatively near date. It should also be possible in view of the ample supplies of concrete shipbuilding material which should now be available from British sources, and the large labor force which has been trained for the work, for the English yards to guarantee that early delivery which will be so important a factor in deciding the destination of orders. In face of the world famine in shipping, and the many uses to which the concrete ship can now be put, the new British industry is an international asset of no mean value. For the time being it can fill the urgent needs of its own and other countries in a spirit of service rather than competition, but under normal conditions the English shipyards are clearly destined to play an important part in the development of the concrete ship to its full sphere of usefulness. It is a notable case of a war industry which may fill a great rôle in the peace era.



DEVELOPMENT OF MANILA PORT AREA.

The development of the Manila port area, practically all of the available lots in which have been leased from the Government by large business concerns, will go forward at once. The Government has taken steps to start laying sanitary sewers and water pipes throughout the district and new streets will be garded immediately. Within a year it is likely that the Manila bay front,

directly in the rear of the piers, will be one of the most important business and warehouse sections of the city. The Governor General has expressed his disapproval of the proposal of the Asiatic Petroleum Co. to erect crude oil tanks in this district for the purpose of piping oil directly to the bunkers of oil burners. He holds that fire hazard to the district would be too great.

Statistics of Chinese Government Railways

Annual Report for 1916 is issued by the Ministry of Communications

Though late in the day there has just been published the second report to cover for an entire year the operations of the Chinese Government railways. It is issued by the Ministry of Communications. The tardiness of the appearance of this report seriously reduces the practical value to the Ministry of the data which it contains. Also, it is, to the public, evidence only of what once was, rather than what is; for internal disorder, financial uncertainty, and foreign relations have so proceeded in the interim, that no one who has any suspicion of the situation in China, will look to this report for facts to confirm his impressions. Still, as an earnest of the intention of this Ministry to give to the public an account of its stewardship, though late, this publication has a high importance. It is probable that in the near future reports will appear much more promptly, and then it will be of the utmost importance that these earlier numbers have been compiled, so that the later results may have a background. During the first few years of any new departure, there are innumerable causes of delay which can be guarded against after those in charge have acquired the necessary experience. Any one who is interested enough to study the report will at once appreciate the number of opportunities for misunderstanding in connection with its compilation. To clear these up must require time.

The report for 1916 follows very closely after the lines of that for 1915. It has simplified the analysis of passenger traffic and that of goods traffic by subdividing each of those tables into ten separate tables. Information as to the average rate, average train load, average journey, average train earnings, and similar data is thus made much more available than before, and the comparative feature is much more apparent. Results for the year are stated in comparison with those of the previous year as follows:—

SUMMARY OF OPERATIONS.

| | 1916 | 1915 | Increase | Decrease |
|--|-----------------|-----------------|-----------------|----------------|
| Operating Revenues | \$62,761,720.23 | \$57,063,000.86 | \$5,698,719.37 | |
| Operating Expenses | 28,842,277.93 | 30,258,531.66 | | \$1,416,253.73 |
| Net Operating Revenue | 33,919,442.30 | 26,804,469.20 | 7,114,973.10 | |
| Income Debits | 13,967,945.92 | 17,290,413.47 | | 3,322,467.55 |
| Income Credits | 775,258.89 | 528,517.95 | 246,740.94 | |
| Net Income Debits | 13,192,687.03 | 16,761,895.52 | | 3,569,208.49 |
| Credit to Construction (Kalgan-Suiyuan line) | | 371,039.01 | | |
| Surplus for the year | \$20,726,755.27 | \$9,671,534.67 | \$11,055,220.60 | |

It is an excellent situation when greater traffic can be carried without a proportional increase in expenses, but when it is carried at an actual decrease in expense one's curiosity is aroused. One fears immediately that the properties have not been adequately maintained. While it appears from the report that there was a slight reduction in actual maintenance charges, the decrease in charges were of an accounting nature rather than physical. For example, maintenance of equipment appears to have cost \$870,000 less in 1916 than in 1915. However, of this amount \$525,000 was due to decreases in depreciation charges. The rule adopted under the Uniform Classifications of Accounts, was that 4 per cent. of the original cost of rolling stock should be set aside annually until the depreciation reserve attained 20 per cent. of this original cost. Under this rule large amounts were charged to operating expenses in 1915 for this purpose. But by 1916 many of the lines were above the 20 per cent. line and so could lower their charges under this head, which they did. The total depreciation reserve of all of the railways combined is equivalent to 26 per cent. of the

cost of all rolling stock, hence the reduction in depreciation charges was entirely justifiable.

Nevertheless there was a net decrease in maintenance of equipment to the amount of \$335,000. When there is taken into consideration the fact that material prices were very much higher in 1916 than in 1915 this decrease is even more significant. If the equipment was in sufficiently good condition to permit of postponing large material repairs until prices might be lower, all well and good. But at that time there was no end in sight to the period of high prices, if indeed it be in sight now. But there was undoubtedly another explanation. The total system reported an increase in passenger train kilometres of 7 per cent. and in goods train kilometres of 6 per cent. with a load per train 10 per cent. heavier in the case of goods trains. It also reports upon eight of the principal lines that the locomotives ran during the year distances in excess of the average in Great Britain. It seems likely that upon these lines the demands for power were so insistent that there was not the same opportunity for repair as in previous years. There is a public interest in the performance of locomotives upon the several lines, as given in one of the summaries which the report contains. It is reproduced herewith.

KILOMETRES RUN PER ROAD LOCOMOTIVE

| | | | | | | | |
|--------------------------|-----|-----|--------|-----------------------------|-----|-----|--------|
| Peking-Hankow | ... | ... | 64,816 | Chinese Government Railways | ... | ... | 45,717 |
| Shanghai-Nanking | ... | ... | 62,380 | Japan | ... | ... | 42,614 |
| Taokow-Chinghua | ... | ... | 53,559 | France | ... | ... | 36,772 |
| Tientsin-Pukow | ... | ... | 51,327 | United Kingdom | ... | ... | 40,583 |
| Kaifeng-Honan | ... | ... | 49,077 | United States | ... | ... | 43,637 |
| Kirin-Changchun | ... | ... | 46,315 | Canton-Kowloon | ... | ... | 41,178 |
| Peking-Mukden | ... | ... | 41,787 | Chuchow-Pinghsiang | ... | ... | 39,477 |
| Shanghai-Hangchow Ningpo | ... | ... | 34,366 | | | | |
| Canton-Samshui | ... | ... | 31,557 | | | | |
| Peking-Suiyuan | ... | ... | 25,514 | | | | |
| Changchow-Amoy | ... | ... | 21,728 | | | | |
| Chengting-Taiyuan | ... | ... | 19,569 | | | | |

Data from foreign countries includes "Switching" or Shunting kilometrage.

Maintenance of way expenses showed the large reduction of \$980,000, which is nearly 20 per cent. This is explained as being almost entirely due to the Peking-Mukden, upon which line in 1915 there were heavy rail renewals. It appears that the old rail which it replaced was not turned into the store for credit until after the first of the year 1916. Hence 1915 figures contained the full expense of the new rail while 1916 figures are reduced by the full value of the old rail. Something over \$1,900,000 was expended for sleepers applied to the track. There is nothing to indicate how many sleepers this provided, but an average price of \$1.50 each is probably not far out of the way. Assuming such a price to be correct this would compute to about 1,250,000 sleepers or about 180 per kilometre of track. Somewhere between 1,700 and 1,800 sleepers are required per kilometre of track. Hence the program of 1916 would appear to be based upon a ten-year average life. For hard woods or for soft woods chemically preserved this is a reasonable assumption. But a great deal of the sleepers used in China are of Oregon pine which as a rule will not last beyond seven or eight years. On the other hand no small part of the trackage of the Government railways has been in service less than even this period. Hence it may be concluded that in 1916 the rate of sleeper renewal was adequate.

In considering the revenues of the Government Railways in 1916 certain reservations need to be noted. In the first place, the public generally knows that during a considerable portion of the year bank notes of depreciated value were received in payment of freights and fares. It appears that these have been counted in the report of revenue at par value since they were so accepted from the public. At the same time it was probably the case that

expenses had to be paid in silver, or in the silver value of notes. No great quantity of such notes were disposed of in this fashion, for under its analysis of income items, the report shows discount on depreciated currency to be only \$580,000. At a discount of 20 per cent. this would represent only about \$3,000,000 par value of such notes disposed of. On the other hand operating expenses for the year were nearly \$29,000,000 and net income debits were over \$18,000,000 calling for a total disbursement during the year of \$42,000,000. Hence in the cash item in the balance sheet which stands at about \$14,900,000 there could not have been any great quantity of silver. The report admits that there was a large amount of notes but does not state the amount. At the close of 1916, though serious, this was not such a critical matter. Notes at that time represented in truth, "quick" assets. But the value has literally evaporated from them since.

Nearly four and a half million out of the total revenues of \$62,700,000 consisted of Government transportation, principally military. This constitutes only about 7 per cent. of the total. To the casual observer this is surprisingly low. Of course the casual observers get their impressions from passenger trains mostly, and of passenger revenue military comprises fully 10 per cent. When it is remembered that military rates are only half commercial rates, the military is immediately seen to be using 20 per cent. of the passenger facilities. In addition to that the casual observer knows that a large portion of the military never has a ticket, never pays for sleeping accommodation, never pays for parcel privileges, so that the statistics fail to reflect the gravity of the situation. But it is well to know that this branch of the Government acknowledges its obligations to the railways to the extent of \$4,500,000. With this as a background it is more easy to estimate the additional amounts which should be charged for the unremunerated services mentioned above, together with the use of goods wagons as living quarters.

The report explains that certain charges are made for the carriage of service stores which are entered under revenue and then charged against operating expenses. The purpose of this is to exercise a restraining influence upon the officers of the line in the use of their own transportation facilities. In 1916 this amounted to over \$1,500,000. Adding to this the military revenue, which, of course, involves merely transfers of credit from the one Ministry to the other, the cash transactions of the lines are reduced by \$6,000,000.

One of the most commonly used figures in the measurement of managerial efficiency upon railways is operating "ratio," that is the ratio or per cent. which operating expenses bear to operating revenues. This figure is surprisingly low upon the Government railways, and as would be expected from what has already been said, shows a considerable decrease compared with the previous year. In 1915 it was 53, in 1916 it was only 46 per cent. Compared with 69 in the United States, 76 in Austria, 70 in Germany, and 63 in France, this is excellent. Even in comparison with such lands of low wages as Japan and India, it is still favorable, the Japanese ratio in 1915 was 53 and the Indian in 1913 was 52.

There was considerable fluctuation between the several lines in respect to operating ratio, as the following table made from data in the report will show:—

OPERATING RATIO, BY LINES.

| | | | | | |
|------------------|-----|----|--------------------------|-----|-----|
| Peking-Hankow | ... | 34 | Chengting-Taiyuan | ... | 59 |
| Peking-Mukden | ... | 42 | Peking-Suiyuan | ... | 60 |
| Kaifeng-Honan | ... | 44 | Shanghai-Hangchow Ningpo | 80 | |
| Taokow-Chinghua | ... | 46 | Kirin-Changchun | ... | 81 |
| Shanghai-Nanking | ... | 50 | Chuchow-Pinghsiang | ... | 95 |
| Tientsin-Pukow | ... | 50 | Canton-Kowloon | ... | 105 |
| Canton-Samshui | ... | 51 | Changchow-Amoy | ... | 158 |

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The effect of rate levels was not inconsiderable upon the showing of the various lines in this connection. For example, if Peking-Hankow rates were reduced class by class to the level of those on the Peking-Mukden, its revenue would be reduced by about \$2,800,000 and its operating ratio would be raised to about 40. If the Shanghai-Nanking could collect the same rates per unit as the Peking-Hankow, its revenue would be trebled and its operating ratio reduced to about 20. But if the Shanghai-Nanking should attempt to collect fares and freights at the same rate level

as the Peking-Hankow, it would lose almost its entire business because of water competition. It would then be in a position similar to that of some of the lines at the end of the list given above, that is, its operating expenses would be greater than its revenues.

Some interesting comparisons can be made from the report with respect to the effect of rates upon volume of business. At least the comparisons lead to interesting speculations. For example, on the Shanghai-Hangchow-Ningpo, passenger rates are but little higher than on the Shanghai-Nanking, and its passenger density more nearly approaches that of the Shanghai-Nanking than any other line in the North, although only about half that of the latter line. Its freight rates, on the other hand, are nearly three times as high, class by class, as those on the Shanghai-Nanking, and its freight density is only one-fifth that of the Shanghai-Nanking. The Chengting-Taiyuan line has an average rate on mineral products nearly twice as high as that upon a similarly short coal carrying line, the Taokow-Chinghua, and its density of traffic in mineral products is barely half that on the Taokow-Chinghua. Yet with a rate half again as high on agricultural products, the Chengting-Taiyuan has a traffic in those commodities nearly three times as dense as that on the Taokow-Chinghua. This illustrates the care that must be used in jumping at conclusions, as well as the fact that no rate however low will produce a highly dense traffic if the commodities are not produced in abundance. But if the commodities are at hand in quantities an unduly high rate will certainly prevent their being shipped by rail. One sees this fact illustrated upon certain lines, where porters are using the railway track as a highway to carry goods in competition with the railway itself.

Perhaps the most useful information which the report contains, at this juncture when the shortage of goods wagons is so critical, is a comparison of performance between the different lines with respect to this class of equipment. The subject is discussed fully in the report but can be treated only synoptically here. In brief the equipment owned by each line is added to or reduced by the amount gained or lost in interchange with other lines. The capacity in tons of the final amount of equipment available is then divided into the total number of tons of goods carried in order to arrive at the average number of times each car was loaded to capacity during the year. It is assumed (with certain exceptions) that one day is required to load and another day to unload each time a car is so loaded to capacity. Therefore, if the number of times a car was loaded be multiplied by two, and the product be subtracted from 365 (the number of days in the year) the remainder will be the number of days left for actual transportation. Actual transportation is measured in ton kilometres. Therefore, if the number of ton kilometres carried by a given line be divided by the tons capacity of equipment which it had at its disposal, and this quotient be divided by the number of days which were left in which to perform the labor, the result will be large or small depending upon whether the cars were moving under load or standing empty, were moving empty or not moving at all, were loaded to capacity or only partially loaded. The results show some wide variations as between the various lines.

TON KILOMETRES PER RUNNING DAY PER TON OF CARRYING CAPACITY.

| | | | | | |
|--------------------|-----|----------|--------------------------|-----|------|
| Chuchow-Pinghsiang | ... | 84.3 (*) | Chengting-Taiyuan | ... | 24.9 |
| Peking-Hankow | ... | 67.4 | Kirin-Changchun | ... | 23.4 |
| Shanghai-Nanking | ... | 66.7 (*) | Peking-Suiyuan | ... | 19.7 |
| Taokow-Chinghua | ... | 61.1 (*) | Canton-Kowloon | ... | 11.3 |
| Tientsin-Pukow | ... | 54.0 | Shanghai-Hangchow-Ningpo | 7.4 | |
| Peking-Mukden | ... | 43.5 | Changchow-Amoy | ... | 5.3 |
| Kaifeng-Honan | ... | 34.0 | Canton-Samshui | ... | 1.2 |

* Only one day instead of two has been allowed on these lines for loading and unloading.

The high record upon the Chuchow-Pinghsiang and the Taokow-Chinghua is explained in part by the fact that upon those two lines there is practically but one class of traffic. This moves regularly and the movement of equipment can be programmed to advantage. Upon lines with a general traffic there is a considerable amount of empty movement which is unavoidable, and an irregular offering of freight so that a considerable idleness results in spite of all precautions. Added to this, there is the effect of the cars which troops keep in idleness for living quarters. Nevertheless, it would seem that a very good case is made for a more

free movement from one line to the other in order to relieve temporary shortages. We know, of course, that the equipment of each line is considered the individual property of that line, rather than as the property of the Chinese Government, and that every official rather scorns the idea that any other official is to be trusted with equipment not his own. But if there are practical difficulties explaining why the shortage on the Shanghai-Nanking cannot be relieved by the very evident surplus on the Shanghai-Hangchow-Ningpo, a line under the management of the same set of officers, this comparison at least points out that serious efforts should be made to overcome those practical difficulties. What excuse is there for the Peking-Suiyuan, a line under full Chinese control for moving its loads an average of less than 20 kilometres a day, when the Peking-Hankow, another line under full Chinese control, is able or is forced to run over three times as far? The few miles of heavy grades over the Hankow pass are not sufficient explanation. The answer is that the controlling authorities have not had at hand the information upon which to base an order requiring the one line to lend equipment to another line more in need of it. The year 1919 should show more even results.

Another comparison of interest is that with respect to employees. This is the first public information on the subject for Chinese railways. There has been a prevalent impression that Chinese railways are heavily over-manned. It has been said the transportation of tea and pencils in the general offices occupied as large a force as the transportation of persons and goods upon the line. But according to the report, China is but little worse off in this respect than other countries in the East. China's 59,857 employees represent an average of 8.8 men per kilometre of track. Japan is said to have 8.6 and India 8.1 computed on the same basis. However, compared with 2.7 in the United States and 1.7 in Canada it would seem that there is no labor shortage in China just yet. However, the basis used is not quite satisfactory. It is better than "kilometre of line," but does not adequately take into consideration the effect of the amount of business transacted. On this subject there is much the same fluctuation between the several lines that has been noted in other connections.

EMPLOYEES PER KILOMETRE OF TRACK OPERATED.

| | | | |
|-------------------|-----|-------------------------|------|
| Changchow-Amoy | 5.4 | Peking-Suiyuan | 10.1 |
| Taokow-Chinghua | 5.6 | Canton-Samshui | 10.3 |
| Kaifeng-Honan | 6.4 | Shanghai-Hangchow-Ning- | |
| Chengting-Taiyuan | 7.1 | po | 10.5 |
| Peking-Hankow | 7.1 | Chuchow-Pinghsiang | 11.0 |
| Canton-Kowloon | 7.6 | Peking-Mukden | 11.2 |
| Tientsin-Pukow | 8.2 | Kirin-Changchun | 12.8 |
| Shanghai-Nanking | 8.8 | | |

Chinese Government Railways 8.8

The high number of employees upon the Kirin-Changchun is curious. This line is managed by Japanese higher officials, in connection with the South Manchuria railway. While no average for the South Manchuria is given, the average on the Chosen railways is stated as 4.5 men per kilometre of track—but little over one-third as many as on the Kirin-Changchun. Other data in the report thoroughly contradicts that the high average on the Kirin-Changchun is due to any density of traffic.

The more significant statistics for the year are as follow:—

| | Total. | Per kilometre of line | | |
|--|----------------|-----------------------|----------|--|
| | | 1916 | 1915 | |
| Investment Assets | \$413,953,795 | \$75,402 | \$75,225 | |
| Operating Revenues | 62,761,720 | 11,425 | 10,477 | |
| Operating Expenses | 28,842,278 | 5,250 | 5,556 | |
| Operating Ratio | 46 (1915—53) | | | |
| Net Operating Revenue | 33,919,442 | 6,175 | 4,921 | |
| Surplus after Fixed Charges | 20,726,755 | 3,773 | 1,841 | |
| Locomotive Kilometres | 31,221,631 | | | |
| Train Kilometres | 21,833,898 | 3,975 | 3,763 | |
| Passengers Originated | 28,658,031 | 5,217 | 4,633 | |
| Passenger Kilometres | 2,064,482,065 | 375,827 | 349,160 | |
| Average Passengers per Train | 201 (1915—199) | | | |
| Average rate per Passenger Kilometre (cents) | 1.06 | | | |
| Tons, Goods Originated | 16,644,437 | 3,031 | 2,720 | |
| Ton Kilometres | 2,620,067,494 | 476,969 | 413,289 | |
| Tons per Train | 227 (1915—206) | | | |
| Average rate per ton-kilometre (cents) | 1.33 | | | |

Importance of the Far Eastern Trade with the U.S.

Eighteen per cent. of the total trade of the United States, including exports and imports, during 1918 was done with the Far East. The imports from the Far East amounted to \$1,041,899,402 and exceeded those of any other grand division, representing 34 per cent. of the total imports into the United States, while the exports to the Far East totaled \$603,063,877 and were next to Europe and North America in volume, representing 10 per cent. of the total export trade of this country. The relative importance of Far Eastern trade can be appreciated from the following figures showing percentages of total trade of the United States with all grand divisions in 1918:—

| Country. | Imports from | Exports to | Total. | Per cent. |
|---------------|---------------|-----------------|-----------------|-----------|
| Europe | \$318,127,305 | \$3,858,705,905 | \$4,176,833,210 | 46 |
| North America | 976,400,347 | 1,325,582,571 | 2,301,982,918 | 25 |
| Far East | 1,041,899,402 | 603,063,877 | 1,644,963,279 | 18 |
| South America | 609,371,205 | 302,840,975 | 912,212,180 | 10 |
| Africa | 85,506,462 | 59,199,319 | 144,705,781 | 1 |
| Total... | 3,031,304,721 | 6,149,392,647 | 9,180,697,368 | 100 |

This enormous increase has taken place practically since 1914 when the total trade with the Far East amounted to only \$491,579,139 or less than 13 per cent. of the total trade of this country. The 235 per cent. increase in Far Eastern trade since 1914 is the largest single increase registered in the trade with any grand division since that year. Other percentages of increase are Africa, 227 per cent.; South America, 185 per cent.; North America, 149 per cent.; and Europe, 97 per cent.

Share of Each Country in Import and Export Trade with Far East

Japan led in the shipments to the United States from the Far East in 1918, supplying 29 per cent. The other countries are included as follows:—

| Imported from— | Value. | Per cent. | Imported from— | Value. | Per cent. |
|---------------------|---------------|-----------|-------------------|---------------|-----------|
| Japan | \$301,919,771 | 29 | Dutch East Indies | \$75,074,667 | 7 |
| Straits Settlements | 150,231,422 | 15 | Australia | 73,289,997 | 7 |
| China | 140,892,573 | 14 | All others | 84,867,743 | 8 |
| British India | 129,688,009 | 12 | | | |
| Philippines | 85,935,220 | 8 | | | |
| | | | Total... | 1,041,899,402 | 100 |

The export trade to the Far East was also centered in our trade with Japan and 45 per cent. of our exports were shipped to Japan:—

| Exported to— | Value. | Per cent. | Exported to— | Value. | Per cent. |
|---------------|---------------|-----------|-------------------|--------------|-----------|
| Japan | \$273,819,586 | 45 | Dutch East Indies | \$23,376,469 | 4 |
| Australia | 79,568,398 | 13 | All others | 73,789,824 | 12 |
| China | 59,134,960 | 10 | | | |
| Philippines | 52,976,182 | 9 | | | |
| British India | 40,398,458 | 7 | Total... | 603,063,877 | 100 |

The Far East is rapidly coming into its own with relation to our foreign trade and the war should teach us the important lesson that while we have been using Far Eastern products for many years we have been buying them through Europe, and with our own ships on the Pacific we may now buy them direct. The benefits are apparent, for in addition to building up Far Eastern credits in this country against which oriental merchants may draw, in the form of manufactured goods, the tribute which we have paid for many years to European shipowners and bankers for handling our Far Eastern trade for us will be diverted to our own coffers.

In order to hold this trade, however, we should recognize the necessity and value of investing American capital in Far Eastern transportation and industrial enterprises, not only because these investments, especially in China, are profitable and safe, but also because our interests should be as great as European interests in those countries where trade follows the loan.—Prepared by the Far Eastern Division, Bureau of Foreign and Domestic Commerce.

Oil and Oilseeds of the Orient

[PREPARED BY THE FAR EASTERN DIVISION, BUREAU OF FOREIGN AND DOMESTIC COMMERCE.]

No single vegetable product has developed such importance in the Far East as the soya bean. Its products are used at home as a food, as a fertilizer, and for lighting and lubricating purposes, and are exported as oil and bean cake. As a food it is the principal ingredient of soy sauce, bean curd, and steamed beans.



BAGS OF BEANS STORED IN ONE OF THE 54 WAREHOUSES
ON DAIREN WHARVES

The bean cake, containing a high percentage of nitrogen, is a valuable fertilizer and is used extensively in Japan, and recently bean oil temporarily replaced petroleum for lighting in China when lack of shipping facilities kept that product off the market. The centre of soya-bean production is Manchuria, and Japan is the chief crusher and producer of oil and cake, though the manufacture of bean oil and cake is also a very important industry of Dairen, Kwangtung Leased Territory. Mukden is the centre of the bean trade and the beans are there bought for cash from the farmers.

Formerly a good deal of the export trade was done through Harbin and Vladivostok, but recent political conditions have diverted practically all of this trade southward. Newchwang and Antung handle a small proportion of the trade, but, being ice-bound most of the winter, their combined tonnage amounts to only 30 per cent. of the Dairen trade. Shanghai and Kiaochow are other Chinese centres for bean oil, while the Kobe district in Japan, is the most important oil mill centre in the Far East.

Method of Cultivation in China

In China soya beans are generally planted early in June and harvested the middle of September, although three minor varieties are planted in April and harvested in July. There are 19 kinds of soya beans cultivated in China, but those cultivated for oil are known as the Eighth Month White Bean and the Water White Bean. These are generally rotated with winter crops of wheat, barley, and rape, which are harvested some weeks before the beans are planted. Seeds are broadcasted and turned under in carefully prepared beds and then replanted, generally in about 10 days. No fertilizer is required for soya beans, the roots of the plant gathering nitrogen from the soil. The native farmer, while not understanding the scientific reason, knows from experience that beans grow well without fertilizer, and that fields that have been planted with beans are more productive than other fields. Thus cotton is often planted one spring and beans the next, although wheat is always the winter crop. With an abundance of cheap

fertilizer no definite rotation of crops is attempted. Weeding is done frequently, especially after the rainy season, and the withered weeds are used to fertilize other fields.

Harvesting is done by hand. The bean stalk is uprooted, dried, and then thrashed by bamboo flail or by beating on a stone. After this the beans are sifted through a large bamboo basket and dried in the sun on matting for several days. They are then bagged for transportation to the oil mills. Under normal conditions the yield of oil beans is 200 pounds per mow (0.2 acre), and the wholesale price is about \$5 per 100 pounds.

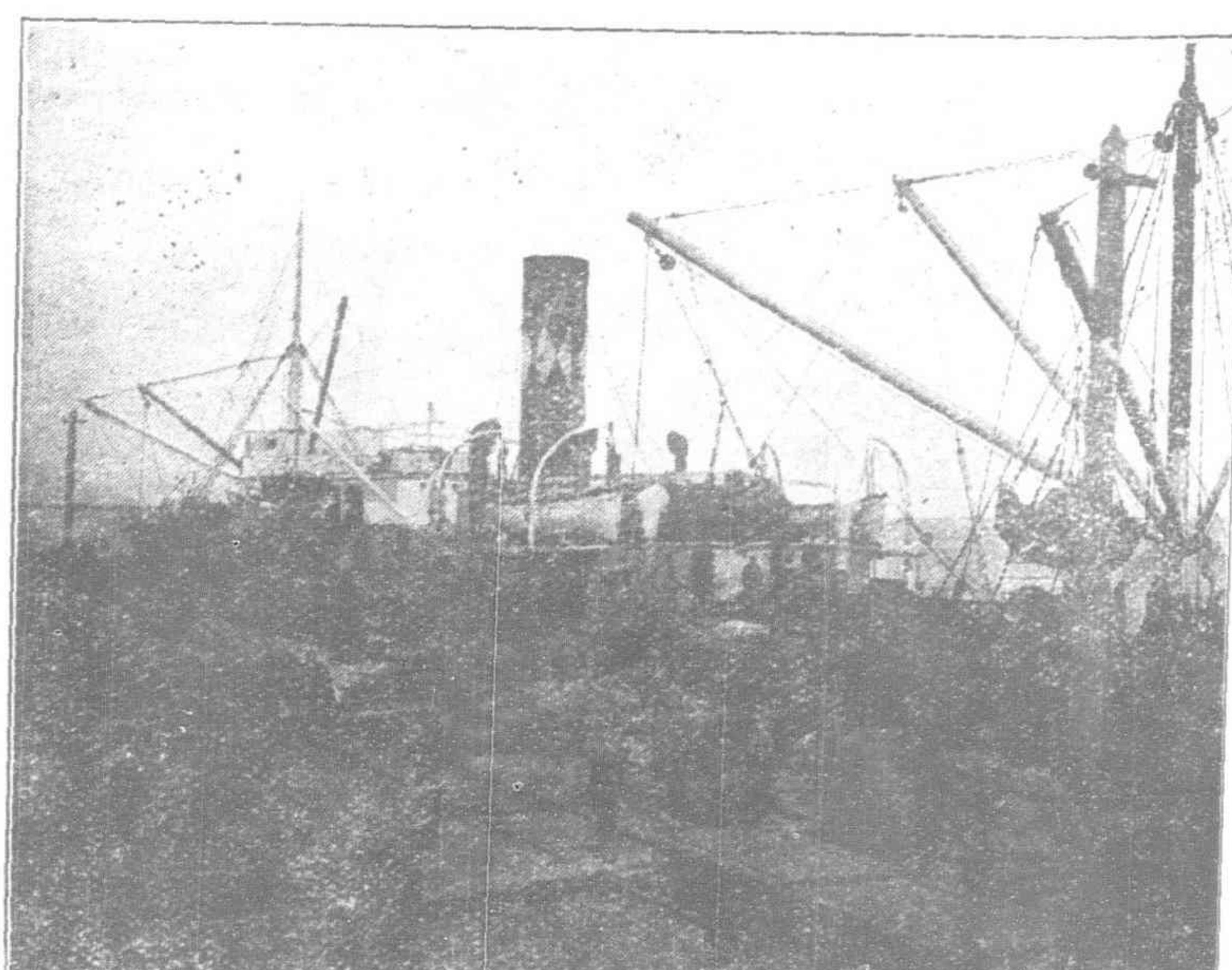
Bean Curd a Chinese Delicacy

Bean curd is made mostly from the two kinds of oil beans described, although all varieties may be used in its preparation. As a rule, however, the other varieties of beans are not planted for oil or curd, but are eaten steamed when the bean is young and tender.

Bean curd is prepared by first steeping the beans in cold water for 6 or 7 hours in summer or 24 hours in winter, and, after washing, grinding with cold water to form a bean milk. This milk is cooked in a large kettle and the film removed from the surface after a quarter-of-an-hour and dried. This film or skin is known as Ton Fu Yi and 20 or 30 films can be obtained from a kettle without thinning the milk too much. After boiling half-an-hour the remaining milk is poured into a jar and a gypsum or salt solution added to curdle it. The proportion is 6 ounces of salt to 1 picul (133½ pounds) of beans. After standing 15 minutes a curdled substance called To Fon No is the result. This product is molded in wooden frames by a heavy block of wood for 15 minutes and is then cut into small pieces with a dull brass knife. A piece 2 inches square and half-an-inch thick retails for 5 cash (0.5 cent). This curd forms the basis for numerous Chinese articles of food and is prepared in various ways. Perhaps the most usual form of serving is to press the curd, wrapped in cloth, for six hours in a box 1 foot square and 8 inches high and then cook in oil. It is also boiled, after such preparation, with pork or cabbage.

Domestic Methods of Marketing Oil in China

There are three classes of wholesale dealers in the domestic oil trade in Chinese producing centres—original importers with agents at the main mill centres, wholesalers acting either as agents



LOADING BAGS OF BEANS AT DAIREN

of the above or representing the mills direct, and retailers dealing with the trade. Oil is retailed for cash. Bean, cottonseed, vegetable seed, peanut, sesame seed, and in a few cases wood oil are sold to customers in brass containers made to hold the required weight. Needless to say, adulteration and underweight are practiced; but by dealing with certain reliable distributors it is possible to get honest weight and pure oil at a slightly advanced price, although even such dealers sell mixed oil at times as a better-quality product.

Bean oil is generally handled between Chinese ports in containers weighing 3 piculs, peanut oil in 2 picul, and castor oil in 2 to 2½ picul containers. Oil for domestic consumption is a regular item of import from Manchurian mill centres, and the price is advanced in winter when most of the northern ports are icebound. Oil is sold wholesale to retailers on 20 days' credit, but wholesalers deal with importers on a cash basis. Wholesalers are in reality a compact organization of brokers who are under moral and customary obligation to dispose of all the stocks of the importers, and while they deal with the importers on a cash basis they really work on a stated commission of 0.05 tael per picul. A fixed price is always maintained for sales both from importers to wholesalers and from wholesalers to retailers, the wholesalers, however, only pay for 98 catties (1 catty=1½ pounds) in a picul of 100 and sell to the retailers at par. Immediate and forward transactions are made, and in the case of the latter 30 per cent. deposit is required. Regular oil exchanges are held in the principal centres, and importers holding large stocks usually rule the market prices. The maximum variance in prices does not exceed 0.50 tael per picul. The uniform standard followed by all retailers is to increase the retail price 0.20 tael per picul for every increase of 0.10 tael per picul in the wholesale price.

Japanese Production of Vegetable Oils

The present estimated production of Japanese oil mills is 90,600 long tons of vegetable oils annually and is made up as follows: Soya-bean oil, 37,509 tons; coconut oil, 27,542 tons; rapeseed oil, 17,848 tons; cottonseed oil, 6,433 tons; and peanut oil, 1,268 tons.

Seventy-five per cent. of this crush is made in the Kobe district and is handled by 25 oil mills, modernly equipped. Steamship lines entering in Japan bring copra for the coconut oil from Singapore, Java, and the South Seas; soya beans from Dairen, Newchwang, and Vladivostok; peanuts from Tsingtau and Tientsin, China; cottonseed from Gensan, Chosen (Korea), and Tientsin and Shanghai, China; and rapeseed from Hankow and India. The oil and cake are shipped by the same steamship lines to all parts of the world.

The following figures show the total quantity and value of Japanese vegetable-oil exports and the value of exports to the United States, including transhipments, in 1917:

| Oils. | Total exports. | | Exports to United States. |
|------------|----------------|-------------|---------------------------|
| | Pounds. | Value. | |
| Soya-bean | 22,643,623 | \$1,561,386 | \$4,947,962 |
| Coconut | 34,916,260 | 3,558,289 | 1,704,957 |
| Rapeseed | 19,677,825 | 1,996,623 | 1,277,487 |
| Cottonseed | 1,612,735 | 154,583 | 165,164 |
| Peanut | 1,813,466 | 136,660 | 1,525,688 |
| Perilla | 285,076 | 16,719 | 92,824 |
| Other | — | — | 478,542 |
| Total | 80,948,985 | 7,424,260 | 10,192,624 |

China's Production of Oil Steadily Growing

In 1917 China exported 162,000 tons of vegetable oils and 200,000 tons of oilseeds. There are six oil mills in Shanghai engaged principally in the soya-bean crush. Other mills are located at Newchwang, Dairen, and Kiaochow, under Japanese control. The wholesale price of bean-oil in 1917, was about 11.50 taels (the average value of the tael in 1917 was \$1.03 gold) per picul. The principal peanut-oil mills are located at Chingpei,

Kiaochow, Kahchang, and Newchwang, and the price averages about 12 taels per picul. Pure cottonseed oil is produced in Shanghai and wholesales at about 11 taels per picul, while sesame-seed oil is made at Hankow and Hsichow and sells at 20 taels per picul. About 50 per cent. of the Chinese mills have modern machinery and the equipment of the remainder ranges from partly modern to crude stone mills using animal power.

The following are the exports of vegetable oils from China in 1915, 1916, and 1917 (the quantities are expressed in piculs of 133½ pounds and the values in Haikwan taels worth \$0.62 in 1915, \$0.79 in 1916, and \$1.03 in 1917):

| Oils. | 1915 | | 1916 | | 1917 | |
|-------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| | Quantity. Piculs. | Value. Hk. Tls. | Quantity. Piculs. | Value. Hk. Tls. | Quantity. Piculs. | Value. Hk. Tls. |
| Soya bean | 1,017,922 | 7,481,165 | 1,565,640 | 11,833,167 | 1,891,353 | 18,196,125 |
| Cottonseed | 129,528 | 894,029 | 110,909 | 845,978 | 78,051 | 616,315 |
| Peanut | 352,098 | 3,431,960 | 561,512 | 6,000,494 | 463,553 | 5,189,839 |
| Rapeseed | 41,350 | 325,458 | 32,584 | 270,510 | 16,388 | 119,536 |
| Sesame seed | 22,008 | 195,602 | 32,651 | 322,593 | 8,904 | 119,086 |
| Tea | 9,403 | 84,489 | 5,080 | 50,029 | 15,706 | 174,035 |
| Wood | 310,344 | 3,012,343 | 515,173 | 5,511,418 | 401,361 | 4,835,908 |
| Other | 36,791 | 201,498 | 74,252 | 543,514 | 57,513 | 470,888 |
| Total | 1,919,444 | 15,623,544 | 2,897,801 | 25,377,703 | 2,932,829 | 29,721,732 |

Dairen exported 90 per cent. of the soya-bean oil in 1917, Shanghai 80 per cent. of the cottonseed oil, Kiaochow and Shanghai each 40 per cent. of the peanut oil, Manchouli 60 per cent. of the rapeseed oil, Hankow 70 per cent. of the sesame-seed oil, Wuchow 80 per cent. of the tea oil, Hankow 80 per cent. of the wood oil, and Dairen and Shanghai 60 per cent. of all other vegetable oils. Exports of oil-bearing seeds and beans for the years 1915, 1916, and 1917, were as follows:

| Oilseeds. | 1915 | | 1916 | | 1917 | |
|-------------|----------------------|--------------------|----------------------|--------------------|----------------------|--------------------|
| | Quantity. Piculs. | Value. Hk. Tls. | Quantity. Piculs. | Value. Hk. Tls. | Quantity. Piculs. | Value. Hk. Tls. |
| Cotton seed | 566,111 | 661,414 | 373,046 | 414,858 | 370,380 | 459,282 |
| Linseed | 152,973 | 438,915 | 202,499 | 622,253 | 139,888 | 428,458 |
| Rapeseed | 1,091,630 | 3,182,087 | 623,984 | 2,007,595 | 430,694 | 1,590,833 |
| Sesame seed | 2,298,208 | 9,555,965 | 1,558,100 | 6,997,751 | 223,200 | 1,100,536 |
| Soya beans | 10,235,797 | 16,866,118 | 6,732,209 | 13,786,993 | 7,927,582 | 15,274,479 |
| Peanuts : | | | | | | |
| Unshelled | 332,191 | 1,119,832 | 216,846 | 803,477 | 102,665 | 355,648 |
| Shelled | 216,086 | 1,006,382 | 424,917 | 1,812,251 | 368,653 | 1,656,220 |
| Other | 330,091 | 897,279 | 347,552 | 1,021,163 | 491,702 | 1,404,422 |

In 1917, 40 per cent. of the cotton seed was exported from Shanghai, 23 per cent. from Hankow, 20 per cent. from Tientsin, 10 per cent. from Ningpo, and 7 per cent. from other places. Linseed came from Tientsin entirely. Wuhu sent 45 per cent. of the rape seed; Hangchow, 30 per cent.; Soochow, 3 per cent.; Shanghai, 3 per cent.; and all other places, 19 per cent. Of the sesame seed 60 per cent. came from Hankow, 12 per cent. from Shanghai, 6 per cent. from Chinkiang, 4 per cent. from Dairen, and 8 per cent. from all other places. Suifenho (Harbin) exported 50 per cent. of the soya beans; Antung, 25 per cent.; Sansing, 4 per cent.; Newchwang, 3 per cent.; Kiukiang, 3 per cent.; and all other places 3 per cent. Of the peanuts (unshelled), 23 per cent. were shipped from Chefoo, 22 per cent. from Tientsin, 16 per cent. from Swatow, 15 per cent. from Shanghai, 12 per cent. from Chinkiang, 7 per cent. from Dairen, 3 per cent. from Hankow, and 2 per cent. from Manchouli. Canton exported 89 per cent. of the peanut kernels; Swatow, 10 per cent.; and Wuchow, Amoy, Foochow, and Dairen, 1 per cent.

Philippine Shipments of Coconut Oil and Copra

The enormous growth of coconut-oil exports from the Philippines, practically all of which are sent to the United States, is shown in the following figures, the quantities being given in kilos of 2.2 pounds and the values in pesos worth \$0.50:

| Year. | Kilos. | Pesos. | Year. | Kilos. | Pesos. |
|---------|------------|-----------|---------|------------|------------|
| 1914... | 11,943,329 | 5,238,366 | 1916... | 16,031,169 | 7,851,469 |
| 1915... | 13,464,169 | 5,641,003 | 1917... | 45,198,415 | 22,818,294 |

Notwithstanding the enormous increase in coconut-oil production the exports of copra have also increased considerably, as shown below:

| Year. | Kilos. | Pesos. | Year. | Kilos. | Pesos. |
|---------|-------------|------------|---------|------------|------------|
| 1914... | 87,344,695 | 15,960,540 | 1916... | 72,277,164 | 14,231,941 |
| 1915... | 139,092,302 | 22,223,109 | 1917... | 92,180,326 | 16,654,301 |

The percentage of these exports to various countries during 1914, 1915, 1916, and 1917 was as follows:

| Countries. | 1914 | 1915 | 1916 | 1917 |
|---------------------|-----------|-----------|-----------|-----------|
| | Per cent. | Per cent. | Per cent. | Per cent. |
| United States | ... | 20 | 15 | 50 |
| United Kingdom | ... | 6 | 11 | 4 |
| France | ... | 48 | 45 | 25 |
| Germany | ... | 7 | — | — |
| Italy | ... | 2 | 11 | 7 |
| Spain | ... | 11 | 15 | 10 |
| British East Indies | ... | 4 | 2 | 1 |
| Japan | ... | 1 | 1 | 3 |
| Other countries | ... | 1 | — | — |
| | 100 | 100 | 100 | 100 |

Imports of Soya-Bean Oil to United States

The following statistics show the growing imports of soya-bean oil into the United States:

| | Jan.-Oct., 1916. | Jan.-Oct., 1917. | Jan.-Oct., 1918. | |
|-----------------|------------------|------------------|------------------|-------------|
| Imports from— | | | | |
| | Pounds. | Value. | Pounds. | Value. |
| China | 14,393,793 | \$679,709 | 13,677,028 | \$1,024,221 |
| Manchuria | 24,366,953 | 1,381,020 | 119,632,620 | 9,314,193 |
| Japan | 79,965,959 | 4,444,437 | 60,141,090 | 4,560,393 |
| Other countries | 353,066 | 22,032 | 89,906 | 12,811 |
| Total | 119,079,771 | 6,527,198 | 193,540,644 | 14,911,618 |
| | | | | 259,138,452 |
| | | | | 29,230,962 |

As the export trade of the United States with the Far East increases it is imperative that this country import sufficient raw materials from the Orient to make the return trip as profitable as the outbound. Before the war this was the policy of European exporters whose oil mills crushed oriental seeds extensively. We have already the facilities in the cottonseed-oil mills of the South and in new mills in the West for extracting at home the enormous quantity of vegetable oil which we now import. [Lists of such mills may be obtained from the bureau's district and co-operative offices by applying for file Nos. 9530, 9531, 9532, 9533, and 9534.] American importers of Far Eastern products may well investigate the domestic market for Far Eastern oilseeds with a view to supplying oil mills in the United States with raw material.

Manures and Fertilisers in Japan

Chinese and Japanese farmers have something in common in their skilful use of waste and refuse materials of all kinds to help conserve soil fertility and productiveness. While China still adheres to very old-fashioned methods and materials, Japan in the last 50 years has taught her farmers to use extensively and to good purpose modern chemical fertiliser.

Some of the home-made fertilising materials used in Japan are given below:

Excreta.—The whole solid and liquid excreta of the country finds its way back to the soil and is not as in many western countries carried out to sea after having polluted miles of rivers. In Japan it is common to put manurial money value of from Yen 1.35 to Yen 1.50 per head of population per annum but this is not based on the chemical content but on the varying amount of labor and transport.

Vegetable Oil Extraction Residue.—Many such residues are in common use as direct fertiliser. A good deal of this material might be economically used as stock feed and its fertilising

ingredients would then indirectly reach the land through animal droppings. From Manchuria and other adjacent territory a great deal of soy bean and soy bean cake is imported into Japan in addition to the bean grown in this country. Likewise cotton seed and rape seed come to this country from the Yangtze valley, China, and even from India. A very considerable area of rape seed is grown as a winter crop in Japan and in the days before petroleum came into use rapeseed oil burned in an *andon* provided the household light.

Fish Manures.—The use of fish manures in Japan is not extending as there is a steady increase of consumption of fish and a development of export of canned and salted fish. For many crops fish manures are still regarded as specially suited and high prices are paid for them.

Silk Industry By-products of three or four kinds are found in use in districts where the silk industry is carried on.

A good deal of the bran of grain also reaches the soil as direct fertiliser.

A great many by-products from manufactures like *sake*, alcohol, beer, indigo and bean curd also do their small share in maintaining soil conditions.

Imported Fertilisers

Subjoined (Tables A and B) are the quantities and values for the past five years. These tables will also show the effects which the great European War have had on Japan's fertiliser imports. The war has practically stopped the import of certain nitrogenous material like sulphate of ammonia, dried blood, and fish guano. However, the Japanese farmer has supplied his crops with the necessary nitrogen by largely increased imports of bean cake. Likewise the import of phosphate rock from foreign countries has diminished but this has been partly balanced by increased output of the same material from Rasa Island belonging to Japan. Further as a result of the war, Japan is now able to manufacture about one-half of her annual total requirement of sulphate of ammonia, which is very well adapted as a nitrogenous manure for irrigated rice. During the war the import of nitrate of soda has largely increased and its consumption as fertiliser is now more than double. This material has obtained a permanent hold as a necessary dressing for mulberry, cereals, tobacco, fruit, vegetables and all crops grown on land not under continuous irrigation.

Use of Fertilisers in Japan

To those who have taken the trouble to study the organization of Japanese agriculture the use of fertilisers not in place of but in conjunction with the old-fashioned material seems to be carried out in a perfectly rational up-to-date method. The system of agricultural education is so comprehensive that it would be hard to find actual horny-handed sons of the soil who have not attended lectures on fertilisers and other agricultural subjects. Universities, colleges, higher schools, Class A agricultural schools, Class B agricultural schools, and peripatetic lecturers employed by the provincial agricultural associations are a few of the phases of the Japanese national agricultural education. The modern chemical fertilisers began to be used during and after the Russo-Japanese war, so that the assimilation of knowledge of their use has been fairly rapid in order to reach the point at which it now is. True, Japan with her teeming population and limited area of arable ground was forced to make use of modern agricultural knowledge; otherwise her food problem would be much more serious than what it is. It is well to add that in seed selection methods the Japanese have shown the same progress as in the use of fertiliser and this is only common sense for the better the seed the more yield of crop to be obtained from cultivation and manuring.

Export of Chemical Fertilisers

Not only is Japan able to handle fertilizers in her own agricultural economy but she has been able to export superphosphate to Australia, New Zealand, South Africa, Java and some other markets. From the end of 1917, however, this export trade

has been practically stopped by the necessity of providing for the home requirements but it is expected that the Department of Agriculture will soon relax its control of fertiliser export.

TABLE A.—QUANTITIES.

| | 1918 Tons | 1917 Tons | 1916 Tons | 1915 Tons | 1914 Tons |
|------------------------|--------------|--------------|--------------|--------------|--------------|
| Sulphate of Ammonia... | 1,080 | 14,980 | 7,107 | 19,790 | 101,793 |
| Nitrate of Soda ... | 48,517 | 54,650 | 45,655 | 30,000 | 24,231 |
| Dried Blood ... | — | — | — | 40 | 631 |
| Bean Cake ... | 1,138,566 | 983,460 | 771,018 | 735,660 | 622,655 |
| Rape Seed Cake ... | 26,472 | 44,600 | 33,737 | 39,804 | 65,410 |
| Cotton Seed Cake ... | 46,269 | 28,600 | 29,424 | 45,212 | 44,162 |
| Other Oil Cake ... | 9,900 | 10,000 | 1,502 | 3,296 | 5,145 |
| Dried Fish ... | — | — | — | 4 | 35 |
| Fish Oil Cake ... | — | — | — | 90 | 815 |
| Fish Guano ... | — | — | — | 604 | 2,086 |
| Phosphate Rock ... | 88,600 | 154,212 | 98,910 | 134,654 | 282,834 |
| Bone Dust ... | 19,158 | 18,832 | 14,081 | 14,025 | 18,955 |
| Animal Bones ... | 30,230 | 33,080 | 22,715 | 21,597 | 30,547 |

TABLE B.—VALUES.

| | 1918 Yen | 1917 Yen | 1916 Yen | 1915 Yen | 1914 Yen |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| Sulphate of Ammonia... | 306,967 | 2,862,608 | 1,199,273 | 2,940,449 | 15,145,147 |
| Nitrate of Soda ... | 11,294,611 | 9,724,626 | 6,184,862 | 3,239,290 | 2,623,998 |
| Dried Blood ... | — | — | — | — | 3,078 |
| Bean Cake ... | 85,836,813 | 51,046,923 | 34,572,481 | 32,386,729 | 29,784,187 |
| Rape Seed Cake ... | 1,868,028 | 2,632,621 | 1,478,355 | 1,592,678 | 2,734,036 |
| Cotton Seed Cake ... | 3,794,885 | 1,755,735 | 1,419,656 | 1,988,003 | 2,070,760 |
| Other Oil Cake ... | 755,301 | 532,543 | 69,722 | 139,734 | 211,736 |
| Dried Fish ... | — | — | — | 268 | 650 |
| Fish Oil Cake ... | — | — | — | 6,640 | 19,962 |
| Fish Guano ... | — | — | 66 | 23 | 45,600 |
| Phosphate Rock ... | 5,070,049 | 5,098,523 | 2,730,615 | 3,402,583 | 7,116,441 |
| Bone Dust ... | 1,705,736 | 1,326,480 | 826,561 | 877,609 | 1,223,241 |
| Animal Bones ... | 3,369,007 | 2,893,774 | 1,337,326 | 1,186,098 | 1,629,413 |
| Artificial Manures ... | — | — | — | 128 | 19 |
| All Other Manures ... | 390,240 | 264,922 | 241,533 | 77,703 | 170,348 |
| Total ... | 114,391,637 | 78,138,821 | 50,067,443 | 47,900,185 | 63,027,166 |

The Shanghai Harbor Question

A Vital Matter for Chinese Trade and Shipping

In the September issue of last year under the caption "Can Shanghai become a World Harbor?" we published an abstract of the report prepared for the Whangpoo Conservancy Board on the possible future development of Shanghai Harbor. This report was communicated by the Conservancy Consultative Board, the body which represents the shipping interests of the port, to the various Chambers of Commerce and other public bodies. It will be remembered that the main conclusion of this report was that it was urgently necessary to investigate all the various technical and economic possibilities of Shanghai Harbor so that a definite policy, which has previously been lacking, could be created. Various schemes were mooted, the two main alternatives of deep draft access via the Yangtze or the Hangchow Bay underlying all, but it was clearly stated that no decision was possible without the closest enquiry.

A sufficient number of the more important bodies approached expressed so strong an approval of the main idea as to warrant the Consultative Board in the opinion that the investigation could and should be undertaken at once, and the Engineer-in-Chief was requested to prepare a scheme and estimate for the investigation. The scheme involved surveys for and designs and estimates of all the conceivable projects (upwards of twenty different combinations have been evolved by the consulting engineers and the technical staff of the Conservancy, the most important of which are referred to under the heading "The Shanghai Harbor Question" on page 349 of the April issue), and proposed that the results should be submitted to an international committee of shipping and harbor specialists from the home countries so that an absolutely unbiased decision could be made. So excellent a scheme could not but receive the approval of the Consultative Board and, having the support of the public bodies interested and of the provisions of the 1912 agreement as to future development, it advised the executive board to carry out the investigation. The Conservancy Board adopted this recommendation and the investigation has now actually been commenced. There will be a period of say two years in which the outside public can only consider the matter in its general bearings.

The benefit to the Shanghai community of any effective scheme will be considerable, and it may be laid down as an axiom that, contrary to much Chinese belief, whatever benefits the foreigner in China also benefits the Chinese. Those members of the Chinese Government who have acquired knowledge of the magnitude and bearing of international commerce will doubtless be much interested in any scheme for the improvement of Shanghai Harbor. The prime feature of national and political importance is that the

existence of such a port will keep China free of specific foreign control, thus enabling China to safeguard its national prosperity. If no such port exists, its functions will be usurped by some adjacent foreign port, probably Japanese. This will render it almost impossible for Chinese shipping to develop, and will prove a considerable tax on the bulk of the Chinese trade. At the present time almost all the income of Shanghai eventually finds its way into Chinese hands and supports about a million of the people, and in the event of a foreign port serving the same purposes as Shanghai, many of these would be ruined. China's foreign trade is about one thousand million Haikwan Taels per annum and nearly one-third of this is handled through Shanghai. The coastwise trade in Chinese goods is over one hundred million Haikwan Taels per annum which is certainly an appreciable fraction of the whole internal trade of the country.

The effect of an improvement in Shanghai's harbor should ultimately be to reduce trans-oceanic freight rates. This will be due to three causes:

- The reduced fuel consumption which occurs on big steamers per ton of cargo.
- Saving of transhipment charges at a foreign port where the very big ships will stop if Shanghai is not improved.
- Cheaper transhipment rates in Shanghai owing to rapid unloading with better organization and wharf equipment, so reducing the time of detention of steamers.

The second item is probably the most important. Various other minor advantages will accrue, the most valuable being the general improvement in conditions which will occur within the distributing and collecting area of Shanghai (about half the developed part of China) if the facilities of that port are brought up-to-date.

It must be realized in this connection that now that China has signified her intention of entering the League of Nations and has generally adopted an attitude of reciprocity towards foreign peoples, there will after a few years be an immense volume of goods coming to and leaving China. If these goods come and go from the present ports in their present condition they will be subject to many external charges and impediments which will not occur if China has a first-class port of its own.

Shanghai is the heart of maritime trade in China and if it is properly developed, it will help the whole country. The Confucian classics tell us with an old-world wisdom not to be despised that if a man masters his heart he rules himself, ruling himself he rules his surroundings in an ever widening circle until in a sense he

sways all humanity. So is it with towns and lands. The modern industrial development of China has been stimulated by the transportation facilities in and to the treaty ports in general and Shanghai in particular and in proportion as these are cultivated so will internal development accelerate.

The accusation will naturally be made that in advocating the development of Shanghai foreigners are influenced purely by the pecuniary gains which will fall to them as the result. The more conservative Chinese statesmen hold that foreign influence which (apart from actual diplomacy) enfers through the treaty ports has only the effect of destroying the ancient culture without any benefit to China. The most pessimistic point to the steady deterioration in China since the advent of the "sea-ghosts" and are confident that a process of devolution is going on which will culminate in the loss of the country's independence. On the other hand, the irritable "sea-ghosts" while they acknowledge that individually they hope each for his reward, nevertheless believe that cooperation between nations and the development of transportation and commerce cannot but work for the mutual benefit of nations. A large Shanghai means a large productive and consuming China and also a large local prosperity, for Chinese even more than for foreigners.

The Shantung Railways Agreement

The following is a translation of the Chinese text of the agreement covering the Tsi-Shun and Kao-Hsu Railways published by the Waichiaopu:—

PREAMBLE.

For the construction of the railways from Tsinan (Shantung) to Shuntee (Chihli) and from Kaomi (Shantung) to Hsuehchow (Kiangsu) (hereinafter called the Two Railways), the Government of the Chinese Republic (hereinafter called the Government) enters upon the following Agreement, a protocol to the final loan agreement, with the Representative of the Japanese Industrial Bank (hereinafter called the Bank) which represents the Japanese Industrial Bank, the Taiwan Bank and the Bank of Korea:—

Article 1.—In order to meet the expenditure for the construction of the Tsinan-Shuntee and Kaomi-Hsuehchow Railways, the Government will entrust the Bank for the issue of the Chinese Government Tsi-Shun Railway Gold Loan and the Chinese Government Kao-Hsu Railway Gold Loan (hereinafter called the two Railway Loans).

If it is found after due investigation that the lines fixed will not be profitable for business, the Government may negotiate with the Bank for alterations and changes.

Article 2.—The Government shall at once draw up an estimate for the various expenses in connection with the two railways and submit same to the Bank for approval.

Article 3.—The term of the loan shall be forty years; and in the 11th year of its issue, the redemption shall commence by instalment in each year.

Article 4.—As soon as the Formal Loan Agreement is signed between the Government and the Bank, the construction shall begin.

Article 5.—The Government shall give the following security to the Bank for the payment of coupons and the redemption of the loan:—

All the properties and the incomes of these two railways, both the present and the future.

Without the permission of the Bank the Government shall not make use of the above properties and incomes as security to a third party.

Article 6.—As to the price of the bonds, the rate of interest and the net proceeds to be received for the two railway loans, they shall be fixed in accordance with the circumstances of the time, and the interest of the Government.

Article 7.—All details which have not been provided for in this agreement shall be fixed between the Government and the Bank.

Article 8.—This Agreement shall form the basis for the formal Loan Agreement of these two railways, which shall be signed four months after its conclusion.

Article 9.—After the signing of this, the Bank shall make an advance of Japanese Yen 20,000,000 to the Government without commission or any deduction.

Article 10.—The interest of the above advance shall be 8 per cent., i.e., Yen 8 per year for each Yen 100.

Article 11.—A similar amount of the Government Treasury Bonds shall be given by the Government for the above advance.

Article 12.—In a period of each six months these bonds shall be changed, when an interest for this period shall be given to the Bank.

Article 13.—After the conclusion of the Formal Loan Agreement, the Government shall refund the above advances by the proceeds first realized by the sale of the bonds.

Article 14.—The transactions connected with the delivery of the proceeds, the payment of interest and the redemption of the above advance shall be done in Tokyo.

Two copies of the above agreement shall be made in Chinese and Japanese and one each be kept by the Government and the Bank. Should doubts arise on any point, the Japanese version shall be followed.

(Signed) CHANG CHUNG-HSIANG,
and "HSIAO-YA-YIN ER LAN."

Dated 29th day, 9th month of the 7th Year of the Chinese Republic, etc.

In addition to the above there are two notes addressed to the Japanese Foreign Minister by Mr. Chang Chung-hsiang, stating that the Chinese Government has decided to contract loans from the Japanese capitalists for the construction of the following railways:—

- 1.—Between Kaiyuan, Hailung and Kirin.
- 2.—Between Chanchung and Taonan.
- 3.—Between Taonan and Jehol.
- 4.—A second line between Taonan and Jehol.
- 5.—Between Tsinan and Shuntee.
- 6.—Between Kaomi and Hsuehchow, etc.

The Japanese Foreign Minister's Note states that in order to cement the good relations between the two Neighbouring Nations, the Japanese Government has made the following proposals in connection with the Shantung Problem:—

1.—With the exception of Tsinan, all the Japanese troops along the Kiaochow-Tsinan Railway shall be withdrawn to Tsingtao.

2.—The police forces for the protection of the Kiaochow-Tsinan line shall be organized by the Chinese Government.

3.—An adequate amount of money shall be paid by the Kiaochow-Tsingtao Railway to meet the expenses of the above police forces.

4.—Japanese shall be engaged in the police headquarters, training institutes, etc.

5.—Some Chinese shall be selected and appointed officers for Kiaochow-Tsinan Railway.

6.—It is now definitely fixed that the Kiaochow-Tsinan Railway and its offices shall later on be under the joint control of the Japanese and the Chinese.

7.—The civil offices which have now been established shall be abolished.

All the above communications were duly acknowledged and approved by either party.

In response to a demand for export to Japan and China the price of Madras indigo, which fell to a very low level in the latter part of 1917 has been gradually rising since January, 1918. A Government crop report issued at the end of October, 1918, states that the area under indigo in the presidency is estimated at 114,650 acres as against 275,700 acres on the same date last year. The decrease is general, but is particularly heavy in the area where indigo is grown as a dry crop in the southwest monsoon season. In these districts the failure of the monsoon the past year has largely prevented sowings, except in Cuddapah, where the season was better. The general decrease in area is stated to be due to the dull state of the market throughout 1917 and the consequent difficulty of disposing of old stocks.

Text of Sino-Japanese Wireless Installation Agreement

The following is the text of the Agreement concluded on February 21 between the Chinese Ministry of the Navy and Messrs. The Mitsui Co., for the erection of a high power wireless installation:—

Translated from Chinese by the "Peking Leader"

It is proposed to erect in China a great wireless telegraphic installation that shall be capable of communicating telegraphically direct with Japanese, European or American great installations. The conditions of Agreement are as follows:—

1.—This Agreement is contracted by the Chinese Ministry of the Navy of the one part (hereinafter called "the Chinese Government") and by Messrs. The Mitsui Co., a Japanese firm, undertaking the contract (hereinafter called "the Contractors") of the other part, and the two contracting parties have mutually agreed upon the conditions of this Agreement.

2.—The Chinese Government have consented to allow the Contractors to erect a great wireless installation whose forwarding and receiving apparatus shall be capable of communicating messages with Japan, Europe and America. The site of the installation shall, after being designated by the Chinese Government, be either bought or leased for the purposes of erection.

3.—The cost for the lease or purchase of lands, erection of buildings and masts or towers, and the construction, transport and erection of the plant, etc., is estimated to be £536,267 (the estimates are attached hereinafter) a sum which the contractors shall raise and shall also assume entire responsibility for all matters connected with the construction and equipment.

4.—The above-mentioned capital sum of £536,267, which is for the purpose of constructing the telegraphic installation shall be repaid in 30 equal annual instalments, that is to say, the whole of this capital shall be divided into 30 equal parts, of which one part shall be paid each year. The part that remains unpaid shall bear interest at the rate of eight per cent. per annum, to be included in the yearly instalment of repayment. The date for each yearly instalment of repayment shall be fixed to be on the 31st of December, solar calendar, to commence from the year that operations begin.

5.—The Contractors's security for the above capital and for the annual interest shall be from the remaining balance of the receipts of the telegraphic installation after due deduction of all disbursements that are to be drawn from that source, hence the Contractors have to assume sole responsibility for the repayment of all disbursements; should the receipts be insufficient to meet the disbursements, then for the repayments of capital and interest the Contractors shall also assume responsibility, but the Chinese Government shall confer upon the Contractors full controlling powers within the period of 30 years' duration.

6.—During the period of sole control of the telegraphic installation by the Contractors, the Chinese Government shall be entitled to a royalty of ten per cent. of the receipts of the workings of the telegraphic installation, which is to be calculated in accordance with the whole year of the solar calendar and shall be payable at the end of each year. Should the receipts earned for the whole year's workings of the telegraphic installation be insufficient to cover the payments of disbursements then the Chinese Government shall still be entitled to a ten per centum of the total receipts collected during the whole year.

7.—The Chinese Government have power to appoint officers in the installation to oversee and supervise accounts, in order that a proper check may be established over the royalty as set forth in Article 6. Besides the appointment of above-mentioned officials, students may be appointed to practise at the station, but the Chinese Government shall bear the whole of the expenses that these students may cost.

8.—Owing to the very great responsibility involved with regard to receipts of the working of the station, the Chinese Government must accord its assent to unrestricted communication with wireless stations in all foreign countries and with seaports

and ships, with a view to future development, but in communication with wireless stations in the interior of China, with the exception of military communications which shall obey the orders of military organizations, all other commercial communications in the interior of China shall be uniformly refused acceptance. In the event of the Chinese Government being on a war footing this station shall obey all martial orders laid down in China.

9.—At any time within the 30 years period, the Government may take back for itself the station. At that time all outstanding balance yet unpaid and accrued interest of 8 per cent. up to that date shall be wholly liquidated by the Chinese Government; the Contractors shall then at the same time have vitiated all their rights of movements *vis a vis* the station. According to the above-mentioned procedure, the Contractors shall previous to the handing over of the station to the Chinese Government make an inventory in the Chinese and English languages of all articles and things that compose the Station and present the inventory to the Ministry.

10.—Should the Chinese Government be unable to repay the sums in accordance with what is stipulated in Article 9, then the Government has no power to remove from the Contractors their control of the Station. Should the Government act in any manner of such a nature it must recognize the Contractors' possession of proprietary rights over the Telegraphic Station.

11.—Since the Contractors have to bear the responsibility of repayment of capital and payment of annual interest during the term of 30 years, therefore the Contractors have the right to transfer the Telegraphic Station to another Company, but the consent of the Chinese Government must be obtained otherwise it would not be lawful.

12.—At the end of the period of 30 years (should provision of Article 9 have not been acted upon) then irrespective of the capital having been totally redeemed or otherwise, this Telegraphic Station shall then wholly be handed over to the Chinese Government without price and the Government shall take over the Station, the Contractors making no demand for recompense whatsoever but the Government shall give six months' previous notice, otherwise the Contractors shall appropriate a 5 per cent. of the annual receipts up to the fifth year as remuneration.

13.—After the Chinese Government shall have taken over the Telegraphic Station as a Government property, the service of the personnel of the Station shall be retained by the Government, who shall pay them their cash salaries. Should there be any one unsuitable, that person may be discharged from the service, but during the term of control by the Contractors all members of the staff shall be found by the Contractors who shall pay them their salaries, such salaries shall be drawn from the receipts of the Station.

14.—Should greater power be added or additional plant be purchased during the term of 30 years of control of the Station by the Contractors, the Contractors shall assume responsibility for such augmentations, but the consent of the Chinese Government for such addition of capital outlay must be obtained and the repayment of such additional outlay shall still be within the same period of 30 years as aforesaid—that is devoted to repayment of capital and payment of interest.

15.—The Chinese Government shall issue Huchows (exemption certificates) for the Contractors to facilitate the transport of all kinds of machinery, material and exempt such from *likin* and other inland miscellaneous charges, but the Contractors must furnish full lists of all machinery material in order that they may be examined and then huchows be issued for these consignments. As to other matters, the regular ordinary regulations in force in China shall be followed.

16.—Should Chinese products of suitable quality and cheaper price be available for use among the material needed for the Telegraphic Station such products shall be given first preference.

17.—This Agreement is done in three exemplars, each in the Chinese and English languages. Should there arise any difference

in interpretation of any point, the English version shall be the authoritative text.

(Sgd.) The Ministry of the Navy of the Republic of China.

The Representative of Messrs. The Mitsui Co.

Done in the

7th Year of the Republic of China, on the 21st Day of February.

NOTE TO THE MINISTRY OF THE NAVY FROM MITSUI CO.

21st February.

Gentlemen,—With reference to the Supplementary Articles Agreement, in Article 2 it is stated that while the control of the Telegraphic Station is assumed by the Chinese Government all disbursements and the service of the amortization of the Capital and interest payments shall be wholly assumed by the Chinese Government, should your Ministry entertain misunderstandings as to this Clause our firm is willing to undertake the control of the Station on behalf of your Government under instructions from your Government, and our firm will also undertake to repay capital and interest and all disbursements shall be paid, and act in accordance with the Articles of conditions as agreed upon in the Proper Agreement. The three Clauses set forth below are for the purpose of safeguarding the interests of our firm and are as follows:

1.—The Chinese Government must give one year's previous notice in order that reliable measures as to procedure may be devised.

2.—During the period that the Telegraphic Station is under the control of the Chinese Government, the interest on the capital and all disbursements shall be borne by the Chinese Government independently in accordance with the stipulations set forth in the present Agreement.

3.—During the period that the Telegraphic Station is under the control of our firm, our firm shall be allowed to collect charges for transmission of all official and commercial messages.

With respects, etc.

This note is attached to the end of the Supplementary Articles Agreement. As both parties are mutually agreeable this is sealed in testimony.

Ministry of the Navy of the Republic of China.
Representative of Messrs. Mitsui Co.

SUPPLEMENTARY ARTICLES TO THE AGREEMENT.

The Ministry of the Navy (hereinafter called "the Chinese Government") with the Japanese firm, Messrs. Mitsui & Co., the contracting Engineers (hereinafter called "the contractors") have mutually come to an agreement upon supplementary articles, in the 7th year on the 21st day of February, for the construction of a wireless telegraph station.

According to the agreement the Chinese Government may at any time repay the outstanding unpaid balance and take over the station as a Government property.

Now it is agreed that the procedure to be adopted after the completion of the erection of the telegraph station the station shall be immediately taken over by the Chinese Government. The expenses necessary for its erection shall be raised by the contractors for the Chinese Government, hence the following supplementary articles have been mutually agreed upon by the Chinese Government and the contractors, and are as follows:

1.—The contractors undertake to raise a loan for a total sum of £536,267 for the Chinese Government which shall be placed to the credit of the contractors in a Japanese bank for the purpose of constructing a wireless telegraph station.

2.—The repayment of the above-mentioned capital sum by the Chinese Government shall be spread over thirty years, that is to say, the total capital shall be divided into thirty equal parts and one part shall be repaid each year, amounting to a sum of £17,875.11.4; the unpaid outstanding balance shall bear interest of eight per cent. per annum, to be payable on the same date as the date of repayment of the annual instalment, to which it shall be added.

3.—The date of repayment of capital each year shall be fixed to be on December 31 of the Solar Calendar. The first year for commencing the repayment shall be from the tenth year after the year that the station commences to operate after its construction and erection are completed and it can communicate telegraphically with the stations erected in Japan, Europe and America.

4.—The rate for the repayment of interest by the Chinese Government shall be according to Article 2 of the Supplementary Agreement, and interest shall commence to be paid on December 31 of the year that the erection of the telegraph station is completed.

5.—According to this agreement of supplementary articles, since the control of the telegraphic station and the powers of its commercial management shall be taken over again by the Chinese Government, therefore, should the telegraphic station receipts from its workings be insufficient to meet the payment of disbursements and so forth the contractors shall not assume any responsibility and Article 5 of the proper agreement shall also be vitiated.

6.—After the taking over again of the telegraphic station by the Chinese Government should there, in the course of its commercial operation, arise any impediment from other overseas cable companies with whom the Chinese Government have already entered into any agreements, then the contractors shall act under the instructions of the Chinese Government, where by the contractors shall devise means to remove any restrictive conditions by negotiation with those cable companies with the station, and should no satisfactory solution be arrived at then the repayments of the instalments that the Chinese Government ought to repay shall be postponed for the time being until some solution shall have been come to, after which repayments may be resumed.

7.—The present supplementary article of agreement shall be an integral part of the proper agreement and shall be identically acted upon in accordance with Article 17 of the proper agreement

(Ministry of the Navy of the Republic of China) (The Japanese firm, Mitsui & Co., Representative, Omura). Done in the 7th year of the Republic of China, on the 21st day of February.

NOTE TO THE MINISTRY OF THE NAVY, FROM MITSUI CO.

Gentlemen,—The agreements entered into between your Government and the Great Northern and Eastern Extension Cable Companies state that prior to the year 1930 no other land telegraph station shall be allowed to communicate telegraphically with Europe and America and so forth, our firm shall duly respect this clause within the year limit prior to the year 1930 as provided for in Article 8 of our Supplementary Articles Agreement. From the year 1931 your Government's agreement with the Great Northern and Eastern Extension Cable Companies will terminate and lose its virtue, and our firm then shall be able to connect with Europe and America and all the world round by commercial communication without restriction. We, therefore, hereby make this declaration, and respectfully request you to take note. This note is attached to the end of our Supplementary Articles Agreement. As both parties are in mutual agreement seals are affixed in testimony. (Mitsui & Co.), February 21.

To the Ministry of the Navy, from Mr. Omura.

Gentlemen,—The agreement that our firm has entered into with your Ministry for the construction of a great wireless telegraph station, all the necessary material required is selected from noted factories in Japan and are either purchased from Europe or America and are all of the best quality and in no case will any inferior material be employed in substitution. We hereby make this declaration and respectfully request you to take note. This note is attached to the Supplementary Articles Agreement and as both parties are in agreement seals are affixed in testimony (Mitsui & Co., Representative Omura), February 21.

DECLARATION.

Whereas the Proper and Supplementary Agreements for the construction of a large wireless telegraph station was completed on February 21, 1918, and whereas, it is mutually agreed by both parties that during the term of 30 years no other party shall be allowed to erect a similar wireless telegraph station for com-

municating telegraphically with Japan, Europe and America, neither may the Chinese Government itself erect an installation, and the Cabinet have in meeting passed the application, and whereas the conditions of the agreement have been mutually agreed upon and the agreement has been signed by both the contracting parties at the end of the document and, furthermore, the statement as set forth in the preceding has been mutually agreed upon by both the contracting parties and that the procedure set forth in Article 17 of the Proper Agreement shall be adopted.

7th year of the Republic of China, March 5. (Mitsui & Co., Omura).

Manufacturing Industries in Tsingtau

[By U. S. CONSUL WILLYS R. PECK, TSINGTAU, CHINA.]

In the last two years Tsingtau, Shantung, has assumed a new importance among Chinese cities as a manufacturing centre; whereas it has previously been known chiefly as a place of export for hides, strawbraid, beef, peanut oil, etc. The port has excellent facilities for the convenience of manufacturing industries, having berthing accommodations for about 20 steamers over 300 feet in length, and there is a usual low-tide depth of water of 33 feet alongside the wharves. A railway 256 miles in length connects the city with Tsinan, the provincial capital, also a promising manufacturing and commercial centre, providing ready access to the raw materials and markets of the interior.

With these advantages of situation and transportation 17 factories have been placed in operation in the last 18 months. A short synopsis of the various inducements offered by Tsingtau for the location of factories follows:

Supply of Coal, Electric Power and Water

The coal mines connected with the Shantung Railway produce approximately 500,000 tons per annum, and other mines in the vicinity produce about 250,000 tons. This coal is mined 200 miles from Tsingtau and is sold by the railway in that city at the following prices per carload of 15 metric tons (the prices are given in silver yen, worth from \$0.90 to \$1 in September, 1918, but the rate changes daily): First-class washed nut, 157 silver yen; second-class washed nut, 142 silver yen; third-class washed nut, 135 silver yen; and dust, 90 silver yen. A reduction of 5 per cent. is given on purchases of 10 or more carloads.

The coal analyzes as follows: Moisture, 1.02 per cent; ash, 8.86 per cent; volatile matter, 16.50 per cent; and fixed carbon, 73.63 per cent. The supply is ample for manufacturing purposes.

Military headquarters further encourages manufacturing industries by giving reduced charges for electric power. Charges to factories quoted in gold yen (worth \$0.4985 at a normal rate of exchange) are as follows: Up to 1,000 kilowatts, 0.06 gold yen per kilowatt; from 1,000 to 2,500 kilowatts, 0.055 gold yen per kilowatt; from 2,500 to 5,000 kilowatts, 0.055 gold yen per kilowatt; from 5,000 to 8,000 kilowatts, 0.045 gold yen per kilowatt; and over 8,000 kilowatts, 0.04 gold yen per kilowatt.

The capacity of the electric plant is now sufficient only for present needs, but is shortly to be increased.

The water supply, while not ample, appears to be sufficient for probable future needs. It is sold at the following rates: Up to 100 cubic meters, at 0.12 gold yen per cubic meter; from 100 to 1,000 cubic meters, 0.10 gold yen per cubic meter; and over 1,000 cubic meters, 0.08 gold yen per cubic meter. For ships it is sold at 0.22 gold yen per cubic meter.

Freight Rates on Shantung Railway—Land Rental

The Shantung Railway freight tariff is too long to be included in this summary, but the following schedule shows the discounts allowed on raw materials for factories and at the same time indicates the principal materials available. To cotton mills on raw cotton, 30 per cent; to silk filatures on cocoons, 5 per cent; to oil mills on peanuts, cotton seeds, rape seeds, etc., 40 per cent; to soap factories on peanut and bean oils, 20 per cent; to flour mills on wheat, 30 per cent; to egg-products factories on fresh eggs, 30 per cent; to breweries on barley, 30 per cent; to glass

factories on silica and broken glass, 40 per cent; to cement factories on limestone, 30 per cent; to fire-brick factories on clay, 30 per cent.; to bone-meal factories on animal bones, 30 per cent.; and to match factories on wood for match sticks, 30 per cent.

The list is not complete by any means, wool and hides, for instance, both of which are important exports from Tsingtau, being omitted.

Land in the factory district is leased by the Government on a sliding scale of charges varying from 0.12 to 0.36 silver yen per *tsubo* (about 36 square feet). Due to present conditions leases as a rule are limited to five-year periods.

Duties and Shipping—Labor Abundant

Refund of duty may be claimed on machinery and factory equipment for use in the Leased Territory of Kiaochow, and export duty on manufactured products (roughly 5 per cent. ad valorem) is charged only on the value of the raw materials utilized. These provisions remain from German arrangements with the Chinese Government.

Though ocean-going steamers do not make Tsingtau a port of call, at present, there is abundant shipping connecting with such lines at Kobe, Dairen, and Shanghai, and under normal conditions manufacturers need not fear lack of space.

There is an abundant supply of unskilled labor, both male and female, to be had at 0.20 to 0.40 silver yen per diem and artisans receive up to 0.60 silver yen per diem. The local Chinese are, moreover, easily taught various processes involving merely manual dexterity, such as operating looms, etc., and have also proved apt at machinery. Their qualities of industry, sobriety, and docility are well known.

At present freight is shifted mainly by man power on trucks, but good roads being universal, there is no impediment to the use of motor trucks. One American firm already employs them. Good mules may be bought for about \$50 and maintained for about \$20 per month. It should be remembered that with normal exchange these costs are much reduced.

Steel Expert to Visit Far East

It may be regarded as a sign of the times that the house of Rownson, Drew & Clydesdale, Inc., of New York, exporters of steel, with offices in London, San Francisco, Paris, Glasgow and Belfast are sending their General Sales Manager Mr. H. Lad Landau, to the Far East, Australia and New Zealand for the purpose of studying the needs and requirements of buyers of steel and to investigate market conditions at first hand. Mr. Landau is an expert on American mill methods. He was originally connected with the W. J. Crouch Company, Incorporated, before they amalgamated with Rownson, Drew & Clydesdale, Inc. and is a man of brilliant attainments and wide experience. He was twice circumnavigated the globe, and is regarded as one of the foremost authorities on American iron and steel. Although he has lived in America for a good many years, he is still a Briton, having been born in Sydney, and like the house he represents, which is also of British origin, having been



MR. H. LAD LANDAU

founded in London, in 1819, he has the reputation of being able to see the customer's point of view, and is always ready with helpful suggestions whenever difficulties arise.

Alleged Secret Japanese-German Treaty

The following is the Draft of the alleged German-Japan Treaty of 1918, with Explanatory Note. It is a copy of a document taken from the official files of the Central Soviet papers in the Bolshevik archives at Perm on February 2 of this year, when the anti-Bolshevik Army ejected the Bolsheviks from the town. The document was obtained by Major Slaughter, U. S. Army attached to the Siberian Army for special service, and was telegraphed in cypher on February 22 from Ekaterinburg to Vladivostok and thence, again in cypher to Washington and Europe.

It is stated that the Bolshevik Ambassador to Berlin procured the details of the alleged Treaty after the German Revolution and the sacking of the German State archives, and telegraphed them to Russia and as the result the following appeared in the official "Isvestia" of the All-Russian Central Executive Committees of the Soviets, Nos. 255 (519) and 256 (520) of November 22 and 23, 1918:

From fully reliable sources we are informed that:

At the end of October there was received fully reliable and exact information about the arrival in Stockholm of the Japanese Extraordinary Representative Oda, with the aim of carrying on secret conversation with the German Ambassador Lutzius, concerning the conclusion of a German-Japanese secret Treaty. An agreement in principle was reached, after which Oda went to Berlin for the final working out of the treaty itself. The result of the conversation was the draft of a treaty, which together with the explanatory note attached, we here publish. We are reliably informed that of the German Government no other than Scheidemann supported the project in question, which was on the other hand opposed by the deputy of the centre, Secretary of State Erzberger. The revolution which took place in Germany prevented the carrying out of the plan which was the expression of the idea of the treaty and which consisted in the following, namely: that a restoration be carried out in Russia by the forces of Germany and Japan and a German, Russian, Japanese Alliance be formed in which Russia should be subordinated to the other two partners in the Alliance. After the revolution this treaty became known in the German press and it was published by the Hamburg "Red Banner." This disclosure caused animated discussion and bitter polemic, in connection with which the press close to the German Government tried to refute the very fact of the existence of such a draft. Material at our disposal, however, does not leave the slightest doubt of the authenticity of the documents published by us, all the more that in the composition of the present Japanese Cabinet entered one of the most important Japanese statesmen of German orientation, Gen. Tanaka, Minister of War, whose pronouncement on the seventh of May, 1917, in defence of an Alliance with Germany provoked at that time the protest of all the Allies. Furthermore from the documents earlier published by the People's Commissariat of Foreign Affairs it is manifested that efforts towards the conclusion of a separate peace and an alliance between Germany, Russia and Japan were made by the German Government in March, 1916, by the German Ambassador in Stockholm, that same Lutzius, through the Japanese Ambassador Ujida (Uchida).

Draft of the German-Japanese Treaty

STRICTLY CONFIDENTIAL.

Paragraph 1.—Both high contracting parties bind themselves as soon as the world political situation permits, to help the third party, Russia, to obtain under their direction the settlement of her internal affairs and the position of a world power.

Paragraph 2.—One of the high Contracting Parties, Japan, binds herself to allow the other High Contracting Party, Germany, the enjoyment of the prerogatives growing out of her treaties with the third Party, Russia, as far as they concern Central Asia and Persia and assist in the conclusion of a most

favored nation treaty with mutual (reciprocal) guarantees between the third power and the two contracting Powers.

Paragraph 3.—One of the High Contracting Parties, Japan, binds herself to allow the other Contracting Party, Germany, the enjoyment of the rights of most favored nation given to her by the treaties in Southern China and of certain privileges growing out of this treaty as yet to be defined in a special treaty, and in this connection both Contracting Parties bind themselves not to allow the passing of further concessions in regions yet to be definitely defined, into the hands of foreign Powers—America and England.

Paragraph 4.—One of the High Contracting Parties, Japan, binds herself indirectly to protect the interests of the other High Contracting Party, Germany, in the coming Peace Conference, in a manner agreeable to that Party in order that she might suffer as little as possible from the onerous terms of peace in respect to territorial and financial losses.

Paragraph 5.—One of the two High Contracting Parties binds herself on the basis of a treaty to be concluded with the third Power after her restoration to secure for the other Contracting Party, Germany, the conclusion of a treaty of mutual (reciprocal) guarantees, military, political and economic and to bind her services to the other Party, Germany, in this direction.

Paragraph 6.—In return for this the other High Contracting Party, Germany, binds herself to conclude a secret military convention on land and sea with the aim of an alliance of mutual (reciprocal) guarantees and mutual protection against the aggressive intentions of America and England the details to be worked out immediately after the conclusion of peace by specially empowered delegates of both High Contracting Parties.

Paragraph 7.—The secret treaty resulting herefrom will define the basic lines of foreign policy of the three High Contracting Parties and may in its full extent and in all its individual paragraphs be worked out immediately after the re-establishing of the third High Contracting Party, Russia.

Paragraph 8.—The present treaty is concluded for a period of five years counting from the moment of the restoration of the third party, with the exception of paragraph four, which goes into effect immediately upon receipt of certificates of ratification. In case none of the High Contracting Parties announces six months before the end of the five years period the intention of discontinuing the action of the treaty, it automatically remains in force for a further five years period, until one or another of the Contracting Powers signifies its intention of discontinuing it.

Paragraph 9.—The present treaty should be ratified as soon as possible and certificates of ratification should be prepared in duplicate in French and German, the German text being the authentic one for Germany and the French text for Japan.

EXPLANATORY NOTE ATTACHED.

The question whether the Western orientation which German policy followed during the whole course of the war was the right one received such an exhaustive answer from the very course of the war and of events that it is doubtful if a critical consideration of it is valuable, the more so that at the present moment it has a merely historical interest and not any real significance. The Western orientation brought with itself also the mistake that they (the Germans) did not wish to conclude peace with Russia because they considered it possible to preserve the continued readiness to carry on the war among the Social Democratic sections of the German people possible only under the motto of the battle against reactionary Czarism.

In direct contrast to this was the policy of Japan who concluded in the middle of the war an Alliance with Russia, the full meaning of which in view of the disintegration of Russia lies in the future.

The existence in Germany of the idea that it would be possible to make peace with England at the expense of Russia as circumstances showed was not only unfounded, but entailed serious

consequences in internal politics for the German Federation of States and for her Allies.

This was, however, not the only mistake of the political orientation in question. After Germany reached the conclusion that an agreement with England, either directly or through America, was impossible, she let the moment slip by for a timely agreement with Russia, by means of which she could have thrown over the hoped-for bridge to the Near and Far East.

In all probability by means of such an orientation Germany would have prevented the disintegration of Russia and would have protected and even strengthened her rear in the East in an economic, political and military sense.

Further it is unlikely that Bolshevism would have been able to obtain such a clear cut mastery in Russia as has been seen in the past twelve months. In all probability in the event of an Eastern orientation on the part of Germany, its progress or mastery would have been only a momentary phenomenon or episode and at all events would not have brought on such heavy internal and external catastrophes for that state.

An Eastern orientation of Germany would place England face to face with the necessity of withdrawing from a purposeless war and becoming peace loving because as a result of constant loss of tonnage her future economic development would be under direct threat and a Russia supported by Germany would be a military and political danger to the vital nerves of Asia.

But if supported by Germany, Russia is already a mighty factor constituting a serious danger for England [causing her?] to exercise the greatest caution in carrying out her policy; so much the stronger would this factor be if Japan, supported on the Continent by Germany and Russia, should join the Alliance. Such an orientation would constitute a very great danger for America and England.

From the foregoing it follows that the centre of gravity of future world politics lies in the reestablishment of a Russia freed of Bolshevism and supported from outside for a number of years in which Germany and Japan would be equally interested.

From this Japan would gain the advantage by virtue of the treaty of mutual support with Germany and Russia, she would become a very strong military force with which America would have to reckon, all the more so that the divergence between England and America on the basis of the self-determination of Nations is only a matter of time.

The new political Alliance would mean a double advantage, both a political and an economical one, as she (Russia) would be economically strengthened by Germany and Japan, and would be politically protected against English and American aggression while she would again rise to the position of a world power.

For Germany economic advantage would be in the form of considerable concessions in Turkestan, thanks to which she could make herself independent of America in cotton and paper. In a political and military sense Germany would receive full cover for her rear on land through Russia and on sea through Japan.

The final end of such an Alliance would be the complete removal of England from Asia, the isolation of England from America, through Canada and India and the economic expulsion of America from Siberia and England from Russia on the one hand and the exploitation of China, Central Asia and Persia on the other, the spheres of influence being divided according to the following boundaries; Germany receives freedom of action in South China, Persia and Central Asia, while Japan can declare her pretensions to Northern China, Manchuria, Korea and Eastern Siberia.

The Value of Aluminium

Many enthusiasts have hoped great things for aluminium and ventured to think that it might replace steel. Weight for weight in most structural forms aluminium is not much stronger than steel (*i.e.*, aluminium is only one-third the weight of steel but its strength not much more than one-third of that of steel), and the strong aluminium copper alloys are almost as heavy as steel. Apart from this, however, there is another more important consideration. The oxides from which both aluminium and iron are obtained are chemically similar but that of aluminium has a much lower potential energy. All chemical and metallurgical

processes are methods of energizing matter and their cost per pound of product depends on the energy stored in it. Metallic aluminium contains about four times as much potential energy as metallic iron, so that there is no prospect that it will ever cost much less than four times as much to produce.

At present the workable ores of aluminium are rare. Although aluminium is the commonest of all the metallic elements, but even if the ordinary compounds (such as clay) can be used as ores, there is little prospect that as a structural metal, it will become as cheap as steel. While generalizations are dangerous, it is also almost true that the compounds which require little energizing to convert into materials with great strength (in its way a form of stored electrical energy) are naturally rare, while those which require much energizing to produce the same result are common. In this way something like a balance is struck and the only real opportunity of a great expansion in the aluminium industry lies in the possibility of the cost of transporting say iron ore to the coal exceeding the cost of extra coal required to smelt ordinary clay into aluminium.

Aluminium compounds are numerous in China but those from which the metal can be obtained have not been noticed. If they are found, water power may perhaps be used to reduce them.

Siam's Purchases of Railway Material

[By VICE-CONSUL CARL C. HANSON, BANGKOK.]

Practically all of the railway material used, both for the Siamese Government and for private railways, is imported from foreign countries. The Government railways now open to traffic consist of 946 kilometers (588 miles) of broad-gauge lines and 1,351 kilometers of meter gauge (3.28 feet) lines, the former being known as the Northern and the latter as the Southern Line. The total length of the four private lines open to traffic is 106 kilometers (66 miles), namely, the Paknam Railway of 20 kilometers, the Tachin Railway of 33 kilometers, and the Meklong Railway of 34 kilometers, meter gauge, and the Phrabad Railway 19 kilometers, 0.75 meter gauge.

The supplies imported for these railways and landed at the port of Bangkok are listed by the customs under the heads of railway material, and cars and trucks for railways or tramways and parts thereof, the imports of the former amounting to 12,190,725 kilos in the fiscal year ended March 31, 1914; 10,946,227 in 1915; 1,906,922 in 1916; and 1,712,389 in 1917; while of the latter the imports totaled 330,336 kilos in 1914, 397,687 in 1915, 520,502 in 1916, and 553,484 kilos in 1917 (1 kilo=2.2 pounds).

The value of the imports into Siam of railroad material and cars and trucks for railways, etc., from foreign countries during the four fiscal years ended March 31, 1917, was as follows:—

| | 1913-14 | 1914-15 | 1915-16 | 1916-17 |
|--------------------------|--------------|---------|---------|---------|
| Railroad Material ... | ...\$508,920 | 475,014 | 123,192 | 137,183 |
| Cars and Trucks, etc.... | ... 81,544 | 104,319 | 131,982 | 192,487 |

The customary method of buying railway material for the Government railways has been through public tender, while for the private railways the supplies are bought through their respective directors.

Shortage of Rolling Stock

It is reported that the Northern Line of the Government railways is sometimes as much as 400 wagons short per day, and that the usual shortage daily is 200 wagons, while on the Southern Line the shortage occasionally reaches about 100 wagons. The need for rolling stock is likely to become still more acute as new sections on both lines yet remain to be opened up for freight traffic.

The old Siamese system of weights and measures is still in general use, although it was decided some time ago to adopt the metric system.

There are no local Government restrictions on the imports of railway material except the 3 per cent. ad valorem duty which is paid at the port of landing by the importer and levied on the invoice value of goods, including cost of packing, freight, insurance, and all other charges up to the time of the arrival of the goods in port.

Forests and Floods in China

By HERMAN H. CHAPMAN, Harriman Professor of Forestry, Yale University

Perhaps no phase of forestry has aroused so wide a public interest as the influence of forests upon stream flow. For over a century, the governments of modern nations, notably France, have proceeded on the basis that the denudation of mountain slopes caused ruin by unleashing the demons of flood and erosion, and that the only effectual means of control were reforestation of these slopes, combined with artificial barriers in the beds of the torrents. And the only possible method of bringing these great projects of restoration and protection to a successful conclusion has been found to be national control.

While France, under the constructive national forces of the republic, has gone a long way towards correcting the evil denudation which followed the rampant individualism of the revolutionary era, America has been struggling towards a realization of the same truths. For over a century not counting the colonial era, our nation took no effective steps to safeguard the public interests represented by the protection belts of forested mountains from which our rivers take their rise. Finally, the principle of national ownership and control was won, both in the west and the east, and we are buying back the lands in the Appalachians and White Mountains which passed from public control under a thoughtless and exaggerated individualism.

Meanwhile, China has been the principal sufferer from floods due to deforestation, and the best and most convincing examples of the devastation and ruin caused thereby may be studied in the great plains of north central China, whose rivers rise in steep mountainous country, which has been converted by unchecked forest exploitation into barren slopes devoid of vegetation.

It remains for an educated and keen minded Chinese forester, Dau Yang Lin, a graduate of the Yale Forest School at New Haven, Connecticut, and a pioneer in the awakening of new China, to present these facts to the world in a manner thoroughly convincing. Mr. Lin is connected with the University of Nanking, and has devoted his entire time for three years to studying the effects of floods and the influence of forests on their control. In a pamphlet prepared by him and issued by the Chinese Forestry Association, entitled, "Forests and the Chihli Floods," he sums up the evidence. Mr. Lin does not rely on his own judgment, but quotes from the published statements of many prominent engineers, none of them foresters (until within a few years there have been no foresters in China), in support of his conclusions. These are:—

1. That the river channels in the Chinese plains are incapable of carrying to the sea numerous discharge of water in times of flood.
2. That this condition is tremendously aggravated by the great quantities of silt carried down by the torrents, which the streams are forced to deposit as soon as their velocity is checked by the low gradient of the plains.
3. That it is impossible ever to improve these channels by deepening or by levees so that they will carry these floods and silt.
4. That the volume of water and silt must be diminished at its sources in the mountains, so that not only will the flow be extended in point of time and diminished in velocity, but that by so doing the carrying power of the stream will be proportionately lessened and the load of silt diminished.
5. That there are but two means of securing this result—the erection of barriers, dams and reservoirs, and the reforestation of the denuded slopes.
6. That the construction of dams and reservoirs is not only enormously expensive, but will not solve the problem, since these reservoirs will rapidly and completely fill up with silt, requiring their renewal perpetually.

7. That the reforestation of the slopes offers the only hope, and the most practicable method for checking this erosion of soil, and that without reforestation the plains of China will continually be subject to floods of greater and greater severity.

Few of us have any conception of the problem which the Chinese have brought upon themselves by their short-sighted destruction of these mountain forests—a result due directly to the complete absence of government ownership and control of these lands and by the exercise of the rights of private individuals to do as they pleased regardless of the welfare of nation or posterity.

The brief account given by Lin of the great Chihli flood of 1917 may visualize the tragedy resulting from this selfish short-sightedness.

"While in Tientsin during the month of November and December of 1917, I had the opportunity of going through the flooded sections of this city, and it was a terrible sight indeed! The boatman who took us around through the flooded streets would indulge in pointing out to us the highest marks made by the flood water on the different walls, and also tell us that millions of natives were rendered homeless, that thousands had already perished, and that coffins were seen floating in the flooded area. The country which was under crop ready for the harvest is now a great inland sea with boats plying between points or islands formed by rising ground. The damage that has been done to crops and houses, the loss caused by stoppage of trade, interruption of railway traffic on the Peking-Hankow and the Tientsin-Pukow Railways—this has been estimated at hundreds of millions of dollars. It is further estimated that in the city of Tientsin alone there are more than 120,000 flood sufferers, but thank goodness, most of these sufferers are being properly taken care of by different organizations and for their shelter thousands of mud huts have been put up.

"According to the latest report of the general Relief Committee, which gives detailed information of each of the *hsien* that has suffered from the floods, we learn that there are altogether 103 *hsien* of 17,646 villages affected by the floods, and that in these *hsien* there are as many as 5,612,759 sufferers who are either homeless or starving.

"When we come to think of prosperous and peaceful Switzerland as having a population of only 3,425,000 and an area of 15,975 square miles as compared with 5,611,794 sufferers and 15,000 square miles of a flooded districts here, we at once comprehend the severity and the extent of devastation by the floods; and it is no wonder that they have been called phenomenal floods or something that Chihli province has not experienced for the last 170 years.

"Dr. P. E. Licent, a well-known scientist, who conducted perhaps a more scientific investigation through the flooded districts than anybody else, said: 'It is to be feared that next fall there will be another big flood around Tientsin, because the five rivers in this province are badly silted up and the embankments are in bad repair. For instance, along the Tze-ya Ho from Sienhsien to Tientsin, I saw twelve places at which the embankments are broken. Now it is on account of a long continued deforestation which has deprived the different watersheds of their protective covering that all these rivers have become silted up.' Then pointing to the map, he continued: 'I was traveling in the mountains near Paotengfu last August, and I saw hundreds of corpses washed down with houses, dead cattle, boulders, etc., by the terrific torrents. In one place called Tai Lun Mung, near Chochow, I saw eighty-four corpses floating gruesomely on a little pond. The terrible mountain torrents must have been responsible for such a state of affairs. China cannot hope to harness her water or regulate her streams until these torrents are stopped.'

and to stop them permanently a systematic program of reforestation must be carried out."

The conditions caused by these floods tend to become steadily worse, as indicated by Dr. Licent. The river beds become completely filled with great masses of sand and silt, and the mountain slopes become furrowed into deep gullies through which the torrents roar in foaming, boulder strewn crests after every downpour. Mr. Lin cites the well-known physical law that the carrying power of water increases as the sixth power of its velocity, so that an increase to ten times the rate of flow multiplies the power of the stream to transport mud and rocks by one million. This detritus in turn tears out and deepens the gullies, thus concentrating and increasing the velocity of the water. The vicious circle thus established has the most appalling results, and the devastation by a single flood of an area whose population and resources are equal to Switzerland, is the logical consequence.

Among the many citations quoted by Mr. Lin to show that reforestation alone offers a permanent solution of these evils which threaten to destroy whole provinces, is that of Mr. H. Vander Veen, c.e., consulting engineer to the Natural Conservancy Bureau, Peking.

"As long as the slope of the water level is such that a current can be maintained strong enough to carry all the matter held in suspension along, no harm is done. But the natural slope of the plain is, for several rivers, insufficient. In such a case the river is therefore forced to get rid of the soil, held in suspension, along its way, consequently its bed gets raised and in the long run the river has to find another course, which it does by bursting its dykes to find in the lower lying land the place where it can deposit its burden, which it could carry no longer and for which no more room could be found in the old bed. This is the case more or less with every river running through the plain of China.

"The only way to diminish this evil is to diminish the amount of soil brought down from the mountains. And the reason for this enormous quantity of silt coming down from the mountains is that those mountains are bare so that during a heavy rain nothing prevents the water from rushing downward practically immediately after it has fallen, taking with it large quantities of soil, so that it reaches the river down below more like torrents of mud than of water. Now if those mountains were planted with trees not only would then the water be unable to take away so much soil but it would also reach the river gradually in a regular flow divided over a longer period and not within a few hours in fierce torrents.

"It is impossible, therefore, to lay too much stress upon the enormous importance of reafforestation. The deterioration of the various rivers in China and specially of those in this province, would never have reached its present stage if deforestation had not taken place. I say specially the rivers in this province because they all take their rise in the mountains west of the Peking-Hankow line, which for a great part consist of loess, a soil which is easily carried by the rain.

"To build reservoirs in the hills in order to regulate the flow of the water, as has sometimes been suggested, is not only far too expensive but moreover wrong as it does not do away with the problem of silt. Sooner or later these reservoirs would become filled, consequently new ones would have to be built, a process which would have to be carried on into eternity.

"Reafforestation is most imperative, for without reafforestation the improvement of rivers can only be partly accomplished, but all these processes going hand in hand, the improvement of the hydraulic conditions of the country will be decisive."

China has been brought to this condition directly by the absence of a national consciousness and of organized methods of government by which the will of the people could be enforced to secure public welfare and restrain the greed of individuals, which will always, in the absence of such control, throw necessary responsibility for economic consequences to the wind and grab for the immediate profit.

In the United States the struggle for public welfare of ruthless individualism has been waged with more success. Just in time, our great mountainous public lands of the West were

established as permanent national forests—and with the adoption of the policy of purchasing lands in the Appalachians and White Mountains, the economic error of permitting these slopes with their protective forest cover, to pass through the process of a denudation which has been completed in China, bids fair to be checked in time.

It has never been claimed by foresters or engineers that results of equal destructiveness to those now occurring in China would follow the denudation of forested slopes in this country. But this is true only because the combination of conditions here is less dangerous. In the Chinese plain, the watersheds of those rivers comprise 60,000 square miles of very steep slopes, combined with a soil of loess or windplaced silt—and these conditions are aggravated by the flat gradient of the rivers in the plains below, and by their extremely dense population and great fertility. But the operation of physical laws of gravity and erosion are not confined to China. To a lesser degree, but to the full extent permitted by the topography, soil and rainfall, and by the stream gradients these same results not only will occur, but have already occurred along the streams on the Atlantic seaboard and elsewhere. The reckless clearing of steep slopes in the Appalachians and in the wooded areas of Tennessee has caused extensive erosion, injured many rivers by silting, and destroyed millions in property values, while in the west, overgrazing of mountain slopes has been followed by rapid deterioration of valleys through unregulated movements of water.

Why is a forest cover the only solution of this problem? Because the damage is evidently caused by the combination of velocity, a function of volume of flow, and silt, which is the direct result of velocity and volume, and both these conditions are due to the character of the surface receiving the rainfall. Dams are inadequate because by the time the water reaches the streams it is too late to control either velocity or its burden of silt except at enormous expenses. But the forest cover controls both factors automatically. From the time the downpouring rains strike the first or topmost portion of the tree canopy, until the clear water trickles or oozes into the streambeds below, the forest interposes a complete succession of natural barriers to floods and silt. The force of the rain on bare soil dislodges it and hardens the surface. The drainage from such a surface is rapid and complete, carrying sediment from the very point of impact, and causing the gullying to begin in every direction. Rain falling through a forest canopy drips gently to earth, upon a carpet of waterholding litter and humus below while the soil is kept porous by protection from rain, by root penetration, and by the humus itself. The surface litter forms tiny dams in every depression and retards the formation and flow of surface water, replacing it with seepage. Not only is the erosion of soil from the surface prevented but the water is strained and kept clear. When abnormal rainfall swells the streams, their erosive force is kept low by the absence of silt at their sources.

Mr. Lin has contributed information of inestimable significance not only in China but throughout the civilized world, regarding the absolute necessity of maintaining forests on mountain slopes as the one adequate means of protecting fertile plains and rivers, and preventing destructive floods. But not until China has fought and won the battle for national consciousness and a national government responsive to the needs of the people, can she hope to solve this tremendous internal problem. Just as the physical laws operating to destroy the plains of China as a consequence of forest denudation, are world-wide in their application, so the principles of government of the people, by the people and for the people are the only certain methods for securing permanent prosperity and contentment, whether they apply to Caucasians, Mongolians or South Sea Islanders. The Chinese have the natural intelligence to distinguish between despotism on the one hand and rampant individualism on the other, such as caused France to lose considerable portions of her mountain forests. But it takes more than knowledge to secure results. China's barren mountain slopes must be reclothed with forests in order that equable streamflow may be maintained and her people in a measure protected from the terror of flood. The will to fight the battle for true democratic government order and efficiency is made subservient to the common good—this is the need of China to-day—and the first fruits of such a victory will be the creation of a national policy for reforesting the mountain slopes of northern China.—*American Forestry*.

New Books

A RECORD OF EXCHANGE. Compiled by H. F. Bell. North-China Daily News & Herald, Limited, Shanghai.

No one can define this little book in a better way than Mr. A. G. Stephen has done in his preface when he describes it as a "monument of patient labor." Mr. Bell is certainly to be congratulated on the work that he has done, because it is valuable and certainly caused him a lot of trouble and laborious research. He has brought within the easy reach of everybody exchange data of everyday usefulness. We cannot but very strongly recommend everybody interested in the trade of this country to obtain a copy of this useful record, which we hope Mr. Bell will keep up-to-date. The book covers a period of twenty-eight years, from 1890 to 1918, with quotations for Bar Silver, T.T. and four months' credit.

THE NEW CHINA REVIEW, Volume 1, No. 1. Edited by Samuel Couling, M.A., Shanghai.

Mr. Couling, who recently produced that valuable publication the *Encyclopaedia Sinica*, endeavors to fill a gap by producing a periodical devoted chiefly to the interest of sinology. In his foreword he points out that no such periodical now exists and mentions that the *Chinese Repository*, which was begun in 1832, was continued for twenty years, and the *China Review*, which saw the light in 1872, lasted until 1901, since which date there has been a blank in sinological magazines in the English language. The Editor makes an excellent beginning with contributions from Professor Giles, Major W. Percival Yetts, Mr. E. T. C. Werner, Mr. H. B. Morse, Sir E. D. Ross, M. Dore, s.j., Mr. W. Arthur Cornaby, Dr. Herbert Chatley, and Mr. Christopher Irving, but gives warning that the precise character of the *Review* will have to be determined by the voluntary contributions sent in for publication. Wisely he intends to make the journal, if possible, attractive to others than professed sinologues, and announces a determination to eschew contemporary missionary work and current Chinese politics. Great protagonists in the columns of the old *China Review*, like Professors Giles and Parker, have agreed to help to make the new magazine useful, and an urgent appeal is made to others to use it in order to let the world know where we stand in sinological research. Professor Giles also makes an appeal on behalf of the Editor for support by contributors as well as by students. Mr. Couling is to be congratulated upon his first number. It is well got up, is a good harbinger of interesting things to come, and is well printed. So much greater interest is now being taken in China than when the old *Review* was being published that there should be a much wider demand for the new one. All students of things Chinese should certainly applaud the new venture. We cordially welcome the *Review* and hope for the warmest encouragement for its producer.

WHO'S WHO OF AMERICAN RETURNED STUDENTS. Supplement 1. Published by Tsing Hua College, Peking, China, 1918.

When the Tsing Hua College published its Who's Who of American Returned Students it supplied information of great value to all interested in the present activities of the foreign educated students of China hailing from America. The text of the book is done both in English and Chinese and briefly gives a biography of each student. Such a work naturally has to be kept up-to-date and calls for supplementary issues. The first supplement has now been issued, and includes a classification of returned students according to professions and occupations for the year 1917. Altogether 150 students are enrolled in the Supplement, and it forms an important addition to the original volume. The Supplement is now offered for sale at 60 cents silver in China, and 80 cents silver for foreign countries per copy, including postage.

The Pacific Mail Steamship Co.

The report of the Pacific Mail Steamship Company's operations for the year ended December 31, 1918, also statements showing financial condition and property at the close of the year, has been issued.

During the period covered by this report the Board has ordered and authorized the following dividend payments:

On the preferred stock: 1 $\frac{1}{4}$ per cent. on March 1, 1918, to holders on record at close of business February 15, 1918; 1 $\frac{1}{4}$ per cent. on June 1, 1918, to holders on record at close of business May 17, 1918; 1 $\frac{1}{4}$ per cent. on September 1, 1918 (date of retirement of the entire outstanding issue of preferred stock), to holders on record August 5, 1918. On the common stock: 50c. per share and extra dividend of \$1 per share on June 15, 1918, to holders on record at close of business June 1, 1918; 50c. per share and extra dividend of \$1 per share on December 16, 1918, to holders on record at close of business December 2, 1918.

Although the actual operating revenues for the past year were much in excess of those obtained during 1917, our income account does not reflect this increase, as in the case of all of our vessels, with the exception of the s.s. *San Juan* and *San Jose*, the earnings accruing to the Company have been determined entirely by the charter rates allowed by the U. S. Shipping Board under the terms of U. S. Government Requisition Charter.

Included in earnings are amounts entered as commission returns for the operation of our requisitioned vessels for the account of the United States Government, calculated upon the basis of rates for this service as published by the United States Shipping Board.

Regular service has been maintained every twenty-eight days on the Philippines-China-Japan Service with our steamers *Ecuador*, *Venezuela* and *Colombia*. The *Venezuela* was withdrawn for one outward voyage by the U.S. Shipping Board and assigned to the U.S. Army for the movement of Army supplies to Vladivostok, but on completion of discharge this vessel was again returned to us for operation and placed in her regular itinerary. The vessels' fleet position has only been slightly disturbed by this withdrawal, and by the elimination for one voyage of one of our regular ports of call, the *Venezuela* will again operate on our published schedule as before.

These steamers have creditably carried the American flag to the Far East and have materially assisted in the development of our foreign trade relations. The national interest in this service has been most gratifying and forecasts an assured support of the line in the future.

Conditions have not as yet permitted our placing larger and faster steamers in the service, but this will be definitely considered as soon as the Government has announced a clearly defined shipping policy under which such a development would be possible. We are duly mindful of the necessity of maintaining this line with the finest type of vessels.

The establishment by your Company of its own branch offices in Yokohama, Kobe, Shanghai, Manila and Hongkong, replacing the former Commercial Agencies, has accomplished much toward the fostering of American foreign trade, and the beneficial results of this policy have already been most apparent and gratifying.

The American s.s. *Colusa* and *Santa Cruz*, operated under an agency arrangement with the owners of these vessels, have been continued in the Manila-East India Service throughout the year, with the exception that for one outward voyage, on November departure, the *Santa Cruz* was ordered by the Shipping Board to load for account of the U.S. Army for Vladivostok. On sailing from Vladivostok this vessel was returned to her regular service. The axiom that trade follows the flag has been strongly evidenced in the results from the establishment of the Manila-East India Line. On the initial departure inaugurating this service, in order to assure a full cargo, it was necessary to load for ports other than those in the regular itinerary, while at the close of this year we find our tonnage, even though supplemented by U.S. Shipping Board vessels, entirely inadequate to take care of the business offered. This line has developed a new export business that should have further assistance now that the war is over.

To the ports of call—Manila, Singapore, Calcutta, Colombo—the port of Saigon, French Indo-China, has been added. Saigon

was made a port of call at the pressing and earnest request of the Saigon importers and exporters and of our own American merchants. The development of the great possibilities of Saigon have been restricted hitherto owing to the lack of direct transportation facilities. The already large business between the United States, the Philippine Islands and French Indo-China has moved by irregular tramp vessels via Hongkong, and occasionally, as urgent necessity demanded, direct to Manila via chartered tramps. With the establishment of a regular service to Saigon, trade can be carried on with the required facility and, needless to say, the announcement that your Company would make Saigon a regular port of call was received with great enthusiasm.

We were very glad to be able to assist the U.S. Shipping Board by the operation, from time to time, of the following vessels of its fleet:

Caponka, Caddopeak, Courageous, Flying Cloud, Governor John Lind, Hyades, Jutlandia, Kasota, Laen Samud, Kao Samud, Major Wheeler, Neipsic, Princess Matoika, Persia Maru, Quidnie, Selandia, Saint Helena, Triumph, Tjikembang, Tjison-dari, Volunteer and West Indian.

These vessels were assigned to us for operation during the year for one or more voyages on a commission basis, and the additional tonnage has been very helpful to American shippers in the retention and expansion of their Far Eastern business.

The results obtained in training cadet officers have been so satisfactory that the system has been extended from the Trans-pacific lines to include the Panama line, and your Company has appointed during the year 23 cadets. Of these ten have already received their commissions as Junior Officers and are now filling these positions on your steamers. These young men make the highest type of officers and are a distinct credit to the American Mercantile Marine service.

With the termination of hostilities it is expected that our steamers will shortly be released by the United States Shipping Board from requisition charter. As it is anticipated that conditions during the reconstruction period will be temporarily unsettled, your Company aims to pursue a conservative policy, but the improvement of our services and their extension where necessary and feasible will be continued as in the past three years.

At meetings of the Directors held April 8 and October 16, 1918, the officers were authorized to subscribe G.\$1,000,000, and G.\$1,750,000, respectively, to the Third and Fourth Liberty Loans.

Hongkong Shipping Statistics

The trade and shipping returns recently issued by the Hongkong Imports and Exports Department contain a wealth of information. From it we see that during the calendar year 1918, 579,541 vessels of a tonnage of 29,518,189 entered the Port. Compared with the figures for 1917, this shows a decrease of 53,537 vessels with a decrease of 4,974,484 tons. Of the vessels entered and cleared in 1918 5.6 per cent. were British ocean-going vessels, 9.8 per cent. foreign ocean-going vessels, 13.3 per cent. British river steamers, 54.0 per cent. trading junks, and 13.8 per cent. steam launches under 600 tons. Of vessels of European construction 3,337 ocean steamers, 6 sailing ships, 3,660 river steamers and 2,986 steamships not exceeding 60 tons entered during the year, giving a daily average of 27.3 ships, as compared with 29.9 in 1917 and 31.9 in 1916.

The number of foreign ocean-going steamers that entered the Port in 1918 was nearly double that of the British. The following table is instructive:—

| | 1918 | 1917 |
|--------------------------|--------|--------|
| British Ocean-going | 2,444 | 3,004 |
| Foreign Ocean-going | 4,234 | 4,140 |
| British River Steamers | 5,807 | 6,665 |
| Foreign River Steamers | 1,510 | 1,619 |
| Steamships under 60 tons | 6,002 | 6,531 |
| Junks | 23,439 | 26,067 |

T. K. K.'s Profitable Year

The Toyo Kisen Kaisha held a general meeting of shareholders on March 28 when the statement of accounts for the last business term (July-December, 1918) were announced.

The dividend for the last business term has been fixed at 30 per cent., or 20 per cent. lower than for the preceding term, due to the depression in the shipping market for which it is considered necessary to make provision. The statement of accounts as compared with that for the preceding term, is as follows:—

| | Second Half, First Half, | 1918 | 1919 |
|----------------------------------|--------------------------|--------------|------|
| | | Yen | Yen |
| Gross receipts ... | ... 21,463,000 | 21,021,000 | |
| Gross expenditure ... | ... 14,238,000 | 13,215,000 | |
| Depreciation of vessels | ... 606,000 | 611,000 | |
| Expenses for extensive ship | | | |
| repairs ... | ... 175,000 | 175,000 | |
| Net profit ... | ... 6,442,000 | 7,018,000 | |
| Brought forward ... | ... 1,170,000 | 80,000 | |
| To Reserve ... | ... 330,000 | 360,000 | |
| Dividend, 12 per cent. | ... 1,072,000 | 1,072,000 | |
| | | 23 per cent. | |
| Extra Dividend, 18 per cent. | ... 1,608,000 | 2,055,000 | |
| | | 15 per cent. | |
| Extraordinary Dividend ... | — | 1,340,000 | |
| Total Dividend, 30 per cent. | ... 2,681,000 | 4,468,000 | |
| Special Reserve for depreciation | | | |
| of vessels ... | ... 2,000,000 | 1,000,000 | |
| Special Reserve ... | ... 1,000,000 | — | |
| Employes' Pension Fund and | | | |
| Seamen's Relief Fund ... | ... 100,000 | 100,000 | |
| Carried Forward ... | ... 1,502,000 | 1,170,000 | |

Du Pont Company Organizes for Export Trade

The E. I. du Pont de Nemours Export Company, incorporated to take over the Du Pont company's foreign business, which promises to increase rapidly with the after-the-war commercial readjustment, has been organized; officers have been elected and tentative plans announced for the further expansion of the foreign trade. The Export Company will establish headquarters in New York and thus be in close touch with every avenue of trade; and will also maintain an office at San Francisco. The parent company already has foreign offices in Mexico City, London and Rio de Janeiro. In addition to these branch offices it has important connections and agencies in virtually every South and Central American country as well as in Europe, Africa and Asia.

The Du Pont Company's commercial products, the output of which it is proposed to increase very largely now that the manufacture of war munitions is ended are already well established throughout the world. They include commercial explosives and sporting powders, artificial ivory, a leather substitute called Fabrikoid, rubber cloth, paints and dry colors, acids, coal tar and pyroxylin products. This branching out into an extensive foreign trade is regarded as a natural development to take advantage of the great opportunities which the readjustment of trade conditions throughout the world offers.

The active men in the new corporation have been studying the details of foreign trade for a long time and all phases of trade conditions in foreign countries have been looked into with great care. Special attention has been and will be given to the details of commercial relations with other nations with a view to avoiding the mistakes which American exporters have been guilty of making heretofore, because of their lack of intimate knowledge of the requirements of those beyond their own borders with whom they were dealing. The great work done by the Du Pont Company as one of the most successful American munition manufacturing corporations during the last four years has given the Du Pont name a standing throughout the world which it is expected will make the entrance of the Du Pont Export Company into foreign countries comparatively easy.

The Use of Steam Shovels and Dragline Excavators in the Far East

Extensive deposits of bituminous, semi-bituminous and coking coal are found in the Southeastern part of South Manchuria. The largest company operating in these fields is the Fushun Collieries, a corporation controlled by Jap-

cubic yard dipper, 60-ft. boom and 38-ft. dipper truck frame casting while the second axle is supported in the middle in a single large journal which gives it freedom of adjustment and allows the truck to accommodate itself to unevenness in the track. The inequalities of the ground are taken care of by an equalizing beam running across the shovel under one end of the base. This beam at its middle point supports the base and is in turn supported at each end by one truck. This puts the shovel, while moving on a three point support and relieves it of the great strains which it would otherwise be subjected to from uneven ground. Jack screws at each end of the equalizing beam are set against the base when the shovel is digging, thus relieving the beam and carrying the strains directly to the trucks. This device is a very simple one, as it does not get out of order and may be handled by unskilled laborers.

The power is supplied by a locomotive type boiler equipped with a patented scale chamber which keeps the tubes and sheets free from mud and scale. The shovels are self-propelling, the power being supplied from the main engine through a vertical shaft passing through the centre bearing to a cross shaft under the base. The propelling sprockets are mounted at each end of this cross shaft and are connected by means of chains to the trucks. The sprockets and propelling shaft are controlled by jaw clutches so that the propelling power may be supplied on both sides of the shovel or on one side only in turning corners. This shovel can work at the rate of 2 dippers per minute but in view of the many factors entering in the operating conditions and on account of the irregularities of the car service it is difficult to give accurate figures regarding output, but allowing for moving of shovel and other delays 200 to 250 cubic yards per hour would be a fair average.

A Bucyrus dragline excavator shown in the other illustration is working on the river bed for making stock sand piles. This sand is used for filling the underground workings after the coal is removed. This machine is mounted on skids and rollers and equipped with a 100-ft. boom and $3\frac{1}{2}$ cubic yard bucket. It has a long working reach and a large output which makes a very desirable machine for this sort of work.

Although the dragline excavator has proven to be a remarkably efficient and economical machine for working sand, gravel and clay pits, its use is

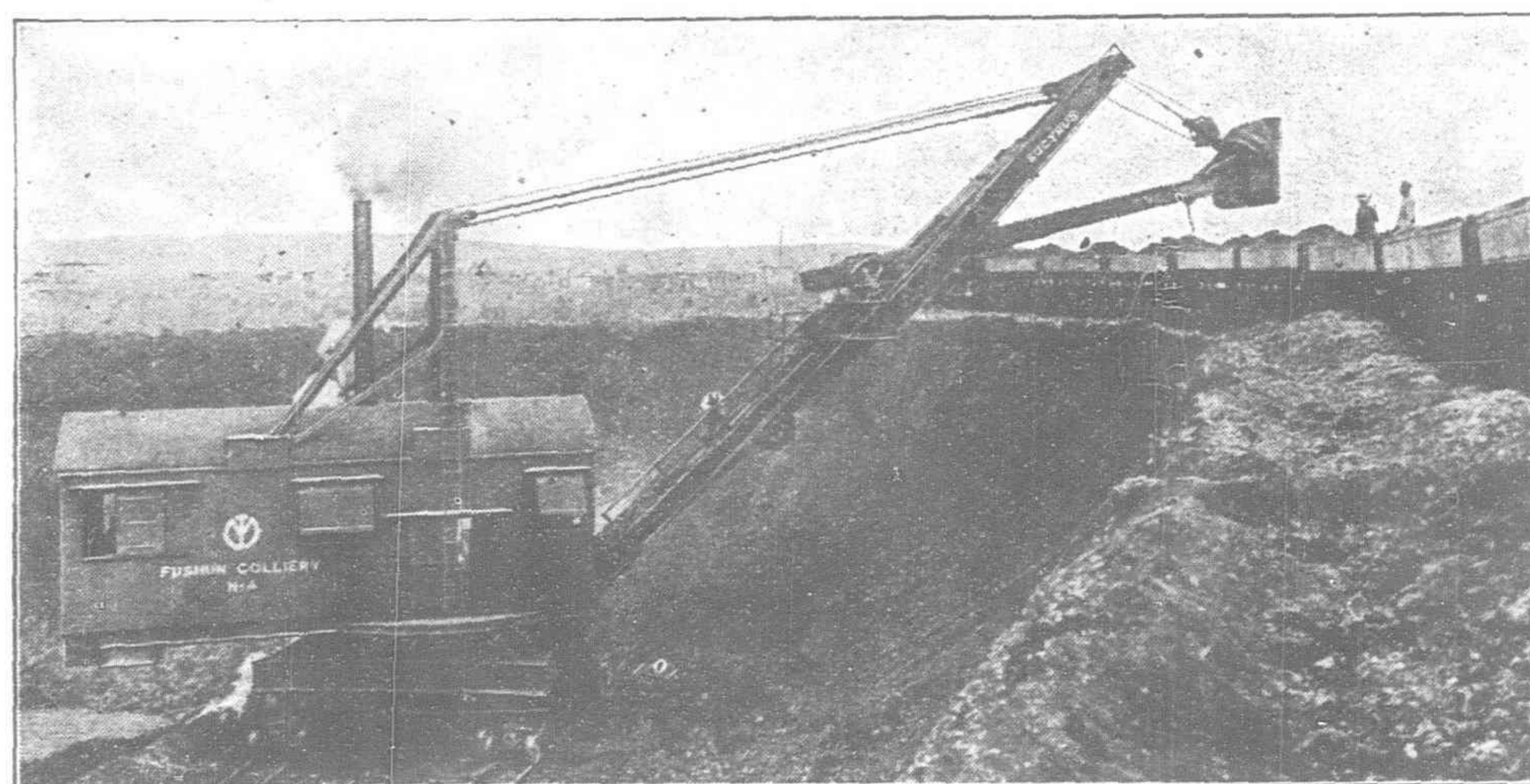


FIGURE 1.—STRIPPING OVERTURDEN AT KU-CHEN-TSU PIT

anese capital and closely affiliated with the South Manchuria Railway Company. This company has seven mines and is producing bituminous coal at the rate of 7,000 tons per day. The methods of mining are underground and open cut. In the underground mines a special method of sand flushing is used which superceded the ordinary pillar system; in the Ku-chen-tsue Mine, the open pit method is used exclusively. The material overlying the coal bed in this mine consists of loam, sand, gravel and blown shale. The estimated quantity of the overburden is 7,600,000 cubic yards, classified as follows: 4,800,000 cubic yards consisting of loam, sand and gravel, and 2,800,000 cubic yards of shale. The average depth of the loam and sand is 40-ft. and the shale in places 200-ft. in depth. The coal veins have a dip of about 30 degrees with an average thickness about 180-ft. The overburden is removed by steam shovels and the coal vein is worked behind the shovels in 10-ft. benches being blasted with black powder and loaded by hand into cars and then hauled to the ground level by means of cables electrically operated.

As a result of extensive development work at the Fushun Colliery mines and general improvement work on the South Manchurian Railway System these companies found it necessary to purchase from the Bucyrus Company, South Milwaukee, Wis., U.S.A., fourteen shovels varying in size from railroad type No. 60-C to the large revolving model 150-B; also one large dragline excavator known as class 24. Under good operating conditions the steam shovel will load for half to one-third the cost of hand work. It will thus be seen that the substitution of steam shovels for hand labor is occasioned in each case, not by any pronounced shortage of labor, but because the mechanical methods are quickest, cheaper and promotes a rapid and material increase in production. The overburden of Ku-chen-tsue Pit is stripped with Bucyrus revolving shovel type 150-B and standard shovels type 60-C. Figure 1 shows the 150-B in operation. This shovel is equipped with a $2\frac{1}{2}$

overburden up to 18-ft. and spoil the material all on one side. After it has made several cuts it can work into overburden from 25 to 28-ft. deep. It has an effective pull on the dipper of 43,000 pounds and a working weight of about 320,000 pounds. The shovel operates on 2 tracks of three feet gauge each. These tracks are laid as far apart as possible so as to give the shovel a very stable foundation. In starting the first or box cut the shovel works down from the ground level to final level on about 8 per cent. grade and the material excavated is carried away in cars. This box cut is made as wide as possible and as the shovel progresses the coal uncovered is removed in the manner described above. At the end of the cut the tracks are shifted and the shovel starts back on another cut depositing the spoil in the pit left by the removal of the coal.

The shovel is mounted on 4 four-wheel trucks which are of the 3 point equalizing type. One of the axles is held rigidly in two bearings on the

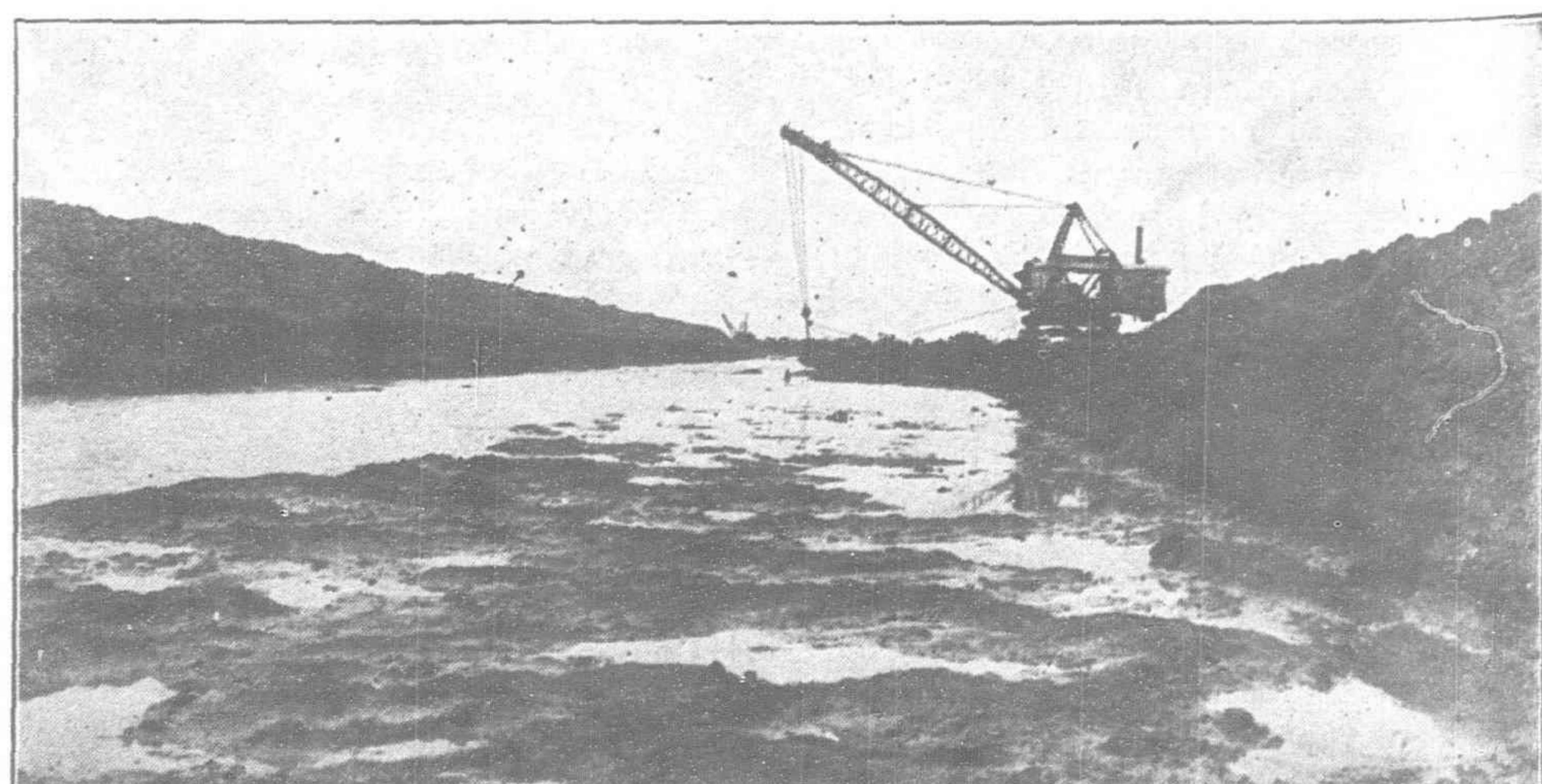


FIGURE 2.—DRAGLINE EXCAVATOR MAKING STOCK SAND PILES

also demonstrated for stripping coal and other mineral deposits, for many sorts of railroad work, placer mining, for excavating canals and drainage ditches. It has frequently been used to advantage in place of a steam shovel. More yardage may be handled at one setting, thus economizing in time and labor.

Bucyrus 60-C and Atlantic type shovels are also used for cutting a hill of decomposed gneiss for the purpose of supplying the sand flushing material.

An important factor in stripping is to keep the

shovels operating steadily. There are inevitable interruptions in operation of sufficient frequency to make serious inroad on the gross output. These delays are quite apart from the special interruptions due to repairs to the shovel or enforced stoppage due to trouble or delay in one or more of the auxilliary operations.

The essential requirements of successful stripping are:—

- (a) First class shovels adapted to the work.
- (b) Facility for quick repairs and thorough upkeep of the shovels.

(c) Competent and skilful runners and cranes-man thoroughly reliable and experienced in this particular kind of work.

(d) Proper supervision of the job.

(e) Good track system.

(f) A good pit crew and well organized dump gang.

(g) Uninterrupted and proper car service.

Given the above conditions the cost of mining with steam shovel as compared with the cost of underground system is infinitely cheaper.

The Marconi Agreement for Wireless Stations in China

The following is the text of the agreement between the Ministry of Communications and Marconi's Wireless Telegraph Company, Ltd. for the construction of three wireless stations, signed at Peking on October 9, 1918:

Agreement made at Peking on October 9, 1918, between the Government of the Republic of China, hereafter referred to as "the Government" and Marconi's Wireless Telegraph Company, referred to as "the Company."

1.—The Government being desirous of establishing reliable communication between Kashgar and Sianfu and now wishing to purchase and erect three wireless telegraph stations the Company agrees to furnish the Government with the necessary funds for such purchase and erection to the amount of £200,000, and the Government now hereby places the order with the Company for three Marconi arc wireless telegraph stations of the latest type each of a transformer input of 25 K.W. and having a guaranteed daylight range of seven hundred miles.

2.—Each station is to be complete in all particulars and to be specially designed so that the maximum weight of any one parcel shall not exceed 350-lb. to facilitate inland transportation in China. Each station shall comprise a complete generating unit capable of developing and maintaining a 25 K.W. load from the terminals of the alternating current generator, and the direct current dynamo shall have sufficient capacity to supply current for ten 60 watt lamps for lighting purposes. Engines are to be petrol driven and supplied with mechanical or electrical starters, petrol tank, and adequate cooling provisions. Switchboard to be supplied with all necessary switches, control rheostats, measuring instruments, fuse terminals, fuses and a supply of the latter for renewals.

The wireless transmitter to be of the latest type and the manipulating key to be free of danger to the operator. Receiver to be of the latest amplifying valve type capable of receiving undamped as well as damped waves. All the spare parts usually supplied to isolated wireless stations to be furnished and in addition spares for the receiver shall consist of twelve extra valves, two low voltage batteries for filament and two high voltage batteries for oscillating circuits to each station.

Each station to be supplied with three steel lattice towers 300 feet in height, together with all necessary thimbles, shackles, triatic stays, spreaders and insulators. Aerial to be made up in conformity with the best and latest practice, and sufficient surplus of antennae wire to be furnished for normal repairs. Earth capacity to follow the best practice and all material therefor to be supplied by the Company. A kit of tools for maintenance and normal repairs shall be supplied to each station. Detailed specifications with prices of every item to be furnished as soon as obtainable by mail from London, and each station shall be provided with full firing diagrams together with complete working instructions for each unit. It is understood that three stations hereinabove ordered will be

erected at Kashgar, Urumchi and Lanchowfu respectively, and that the Company guarantees the equipment supplied to be capable of establishing continuous (*i.e.*, day and night) communication between Kashgar and Urumchi. But the distance between Urumchi and Lanchowfu being over 1,000 miles the equipment is only guaranteed to be capable of establishing night communication between these two points and should it later be found necessary to instal an intermediate Station at Hami or elsewhere to maintain daylight communication between Urumchi and Lanchowfu the Government agrees to purchase the equipment therefrom from the Company at the same price as that quoted hereunder. The Company will present to the Government a Receiver of the latest Amplifying Valve type, delivery at Shanghai, freight and insurance paid, which shall be installed by the Government at their station in Sianfu for receiving from Lanchowfu and, in consideration thereof, should the Government find that the transmitting apparatus to be installed by the Government at Sianfu is incapable of communicating with Lanchowfu, then the Government shall purchase transmitting apparatus from the Company of the necessary power at the then market price of apparatus of the power required.

3.—The price of each Station to be TWENTY-TWO THOUSAND POUNDS STERLING (£22,000) f.o.b. British Port, and the total purchase price £66,000, shall be deducted from the £200,000 hereinabove provided for, leaving a balance of ONE HUNDRED AND THIRTY-FOUR THOUSAND POUNDS STERLING (£134,000) to be advanced by the Company, in cash, to the Government when and as required to be expended for the transportation and erection of the three Wireless Telegraph Stations hereinabove ordered and described. The said sum of £134,000 being subject to call when and as required for transportation, construction and similar purposes, the amounts required from time to time shall be advanced upon receipt of written request from the official appointed for that purpose by the Government, and endorsed by the Supervising Engineer furnished by the Company, but the Company is hereby given authority to make disbursements covering freight and insurance charges on shipments of equipment from British Ports, such expenditure to be supported by proper vouchers. It is specifically understood that in advancing the said sum of £134,000, the Company does not guarantee this amount to be sufficient to meet transportation and erection costs and that any additional money required for this purpose shall be furnished by the Government.

4.—The said sum of £200,000 shall be repayable in sterling in four equal annual instalments beginning two and one half years from the date of arrival of complete equipment in Shanghai. However, the Government shall have the right to repay the whole, or any outstanding balance of, the said sum of £200,000, at any time prior to the date or dates, upon which such amounts are due providing three months notice be given, in writing, to the

Company of the Government's intention to make payments in advance of due date.

5.—As aforesaid the sum of £200,000 is divided in the manner following:—

£66,000,—cost of equipment f.o.b. British Port.
£134,000,—advance to the Government toward transportation and erection expenses.

Interest on £66,000 at the rate of eight per centum per annum is payable, in sterling, six months from the date the equipment herein purchased is delivered in Shanghai, and also interest at the rate of eight per centum per annum is payable in sterling on each amount advanced from the £134,000 for transportation and erection purposes, from the date each advance is made, all interest payments being due and payable on the ninth days of October and April of each year following the date of this Agreement. Interest and principal shall be payable through a Bank in Peking to be later appointed by the Company or through the London County and Westminster Bank in London.

6.—For the purpose of supervising the erection of the three Stations hereinabove ordered the Company agrees to furnish for three years a thoroughly competent Wireless Engineer experienced in the erection of Stations similar to those referred to herein, the Government to pay said Engineer's salary of Chinese Silver Dollars eight hundred per month from the date of his arrival in Shanghai and until the date of his departure from Shanghai, and to defray all travelling expenses from the time of his assignment until returned to London, and he shall receive all legitimate travelling expenses that he may incur.

The said Engineer shall be placed at the disposal of the Government within five months after the execution of these presents, to be available for consultations with officials of the Government regarding the selection of sites, purchase of material, etc., before construction work commences.

7.—The said Supervising Construction Engineer shall have full authority over all subordinate construction engineers appointed by the Government but shall report and be responsible to the official in Peking of the Department of Communications designated by the Government who shall, however, have the right to appoint an auditor to accompany the construction gang to approve purchases and disbursements made by the Supervising Engineer in behalf of the Government. The above terms and conditions of employment of the Engineer shall be embodied in an agreement of employment in the form in use by the Board of Communications in respect of foreign employees, to be signed by the Engineer upon arrival.

8.—The Company agrees to have all equipment for the three Stations ready for shipment from a British Port within six months from the date of this Agreement, unless the Company's works are prevented so doing by emergency war orders of Allied Governments.

9.—The Company agrees to indemnify the Government through a responsible Agency acceptable to both parties in the event that the contemplated

Stations fail to communicate between Kashgar, Urumchi and Lanchowfu as specified in Clause 2 hereof, such indemnity not to exceed the amount accruing to the Company under this Agreement, such guarantee in writing of the responsible third party to be in the hands of the Government before the date the equipment arrives in Shanghai.

10.—The Government agrees to arrange all transportation facilities to purchase all necessary material and to select the most reliable and experienced

Engineers at their disposal at the earliest possible moment in order that the three stations herein purchased may be completed without undue delay.

11.—This Agreement shall be executed in two exemplars each of Chinese and English versions. In case of discrepancy or in the event of doubt arising regarding the interpretation of this Agreement the English version shall rule. Immediately after execution this Agreement shall be officially

communicated to the British Minister in Peking by the Waichiaopu.

In Witness Whereof this Agreement is signed on behalf of the Government of the Republic of China by the Ministry of Communications, and sealed with the Seal of the Ministry of Communications, and is signed on behalf of Marconi's Wireless Telegraph Co., Limited by its duly authorized attorney.

The Siems-Carey Railway Agreements

In 1915 American financiers began to renew their interest in Chinese affairs, and the American International Corporation was formed to undertake work in China and South America, the stress being placed upon China. In this Corporation the National City Bank of New York played the most prominent part, and in conjunction with many of America's leading industrial organizations the Corporation started its work of investigation of foreign fields.

The late Mr. Willard Straight was one of the most enthusiastic promoters of the new organization, and was chosen as one of the Vice-Presidents under Mr. Charles Stone, the senior partner of Stone and Webster, who had been elected President. The Standard Oil Company of New York furnished one of its most experienced men in foreign finance, Mr. R. P. Tinsley, who became the Secretary and Treasurer.

A St. Paul contracting firm, Siems-Carey, became interested in China, and this firm upon an understanding with the Corporation sent Mr. W. F. Carey to look into the prospects of railway construction in China. Mr. E. T. Gregory, formerly of Lee, Higginson and Company was appointed representative of the Corporation at Peking.

In April, 1916, the agreement was originally made for the conservancy of the Grand Canal in Shantung. This agreement was later rewritten to include the Grand Canal in Chihli. In May, 1916, Siems-Carey negotiated an agreement for the construction of some two thousand miles of railway in China.

It is surprising to find that Minister Tsao Ju-ling has published these agreements as secret contracts. We feel safe in stating that the several Legations in Peking were fully aware of their existence, and had copies of same. From time to time various parts of the agreements have been published, and have been made subjects for newspaper discussion. The widest publicity has already been given, and there is no reason why the agreements should not be published in full, and it is due the American International Corporation that the Chinese Government immediately remove the stigma put upon the transactions by publishing them as secret agreements.

Now that the war is over it is hoped that work will be resumed upon both the Grand Canal and the proposed railway lines. After all, China can lose nothing by the immediate extension of her system of communication, and the agreements that have been made public contain nothing that is not to the interests of the Chinese nation. For the first time the building of railways has been placed upon a purely commercial basis, and politics entirely removed.

Peking, May 17th, 1916.

Messrs. SIEMS AND CAREY,
Peking, China.

GENTLEMEN,—We herewith acknowledge receipt of your letter bearing date of May 15th, 1916, by which, for the purpose of carrying out verbal agreements resulting from negotiations had between us respecting the building of steam railroads in the Republic of China, you have submitted your proposition for our acceptance.

We have given the matter full consideration and in behalf of the Republic of China we hereby accept the same and agree as follows:—

1.—The Republic of China shall locate, build, and work steam railroads in China, the aggregate of which shall be fifteen hundred (1,500) miles in length. We specially pledge to build said lines between the following points and such intermediate points as may mutually be considered advisable, namely:—

From Hengchowfu in the Province of Hunan to Nanning in the Province of Kwangsi.
From Fengcheng in the Province of Shansi to Ninghsia in the Province of Kansu.
From Ninghsia in the Province of Kansu to Lanchowfu in the Province of Kansu.
From Chungchow in the Province of Kwantung to Lu Kwei in the Province of Kwantung.
From Hangchow in the Province of Chekiang to Wenchow in the Province of Chekiang.

2.—If after examination it shall be mutually decided between us that any part of said railroad locations shall not be desirable, such undesirable parts may be abandoned: but in that event the Government of China will then locate and construct an equal amount of mileage of railroads upon other locations within said Republic. The locations of the additional lines to complete the total mileage above stipulated to be decided by mutual agreement between us.

3.—The said Republic reserves the right at or before the time of the completion of the above-mentioned 1,500 miles of railroad, to choose one expert railroad civil engineer, in which event you shall choose one, and the two thus chosen shall choose a third, to be known as the "Board of Engineers," and said Board shall determine whether the work then being done, or theretofore done, is being or has been economically performed, and if the majority of said Board shall decide that the work has been and is being done in an economical manner under this Agreement as compared with the cost of construction of other Chinese railroads, all things considered, then the said Republic obligates itself to construct an additional 1,500 miles of railway within said Republic, to be located by the mutual consent of the parties hereto; and all and singular the provisions of this Agreement shall extend and apply to the said additional mileage of railroad in the same manner and to the same effect and purpose as though said additional mileage had been originally made a part of and included in this Agreement; with this sole exception—that the interest rate and discount to be charged upon the bonds to be issued by the said

Republic for the construction of said additional 1,500 miles of railroad shall not be higher than the prevailing interest rate and discount for other Chinese railway bonds at that time.

If the said Republic shall build any extensions or branches of said first mentioned 1,500 miles, the same shall be one under and pursuant to the provisions of this contract as though originally included herein, excepting that the mileage thereof shall be reckoned a part of the aforesaid additional 1,500 miles and subject to the above exception respecting the interest rate and discount on bonds to be issued therefor.

4.—For the purpose of providing the money with which to construct, equip, and operate said railroads the said Republic shall, and it hereby obligates itself to, issue gold bonds, in usual form, in the sum of one million (\$1,000,000) dollars per year in each and every year from the time that this contract shall take effect, as herein provided, until all of said railroads included in or contemplated by this contract shall have been fully completed, equipped and put into practical operation, and you shall obligate yourselves to sell said one million (\$1,000,000) dollars of bonds per year for and during said term pursuant to the provisions of Paragraph Five (5) of this contract. But if in any year of said period said Republic shall be satisfied with the market value of said bonds as fixed by the quotations of the New York Stock Exchange, for the time being, for Chinese railroad bonds, so that it shall appear to be to the advantage of said Republic to issue additional bonds and increase the activity in building said railroads, then and in any such case said Republic shall issue an additional one million (\$1,000,000) dollars of said bonds for that year, and by mutual consent of the parties hereto said Republic may issue an aggregate of not to exceed ten million (\$10,000,000) dollars of said bonds in any one year of said period and in as many years during the life of this contract as may be mutually agreed upon.

All bonds issued in pursuance hereof shall bear interest at the rate of five (5) per centum per annum, payable semi-annually, and each issue of bonds shall be made payable by their terms fifty (50) years from and after the date thereof.

As to the form of the bonds it is to be agreed upon by the Chinese Government or by the Chinese Minister in Washington and yourselves or your assigns as soon as possible after the signature of this Agreement, but if hereafter the money markets in New York or other countries require any modification of the form of the bonds, except in anything that affects the amount of the Loan and the liability of the Chinese Government which are not to be touched at all, such slight modifications may be made to meet the views of the money markets by you or your assigns in consultation with the Chinese Minister in Washington. Any modifications are to be reported at once by you or your assigns to the Chinese Government.

The bonds are to be engraved entirely in the English language and shall bear a facsimile of the

signature of the Minister of Communications and of his seal of office in order to dispense with the necessity of signing them all in person; but the Chinese Minister in Washington shall, previous to the issue of any bonds, put his seal upon each bond with a facsimile of his signature as a proof that the issue and sale of the bonds are duly authorized and binding upon the Chinese Government.

Such bonds are to be numbered consecutively and as many bonds as may be needed are to be properly engraved under the supervision of yourselves or your assigns, and after they are sealed by the Chinese Minister in Washington as herefore provided are to be countersigned by you or your assigns.

If any of the bonds herein mentioned are lost or destroyed, a reissue of any thereof is to be made in the amounts respectively called for by such lost or destroyed bonds, but proper proof of the loss or destruction must be given in the usual form to you or your assigns and the Chinese Minister in Washington for examination and record, and the requisite guarantee is to be obtained by you or your assigns from the respective claimants concerned who shall defray all expenses connected with such reissue of bonds lost or destroyed, and who under the said guarantee shall undertake to indemnify the Chinese Government and or you and your assigns for any loss sustained by reason of the issue of bonds in the place of the bonds lost or destroyed.

No payment of the principal of any such issue of bonds shall be made until after the expiration of twenty-five (25) years from and after the date thereof, and the bonds shall so provide. But payment of principle shall commence on the first day of the twenty-sixth (26th) year from and after the date of issue and shall thence be made and shall continue to the full maturity thereof at the rate of four (4) per centum of the par value thereof per year, and in each and every year of said principal paying period the said Republic shall pay and retire, by lot in the usual manner, four (4) per centum of the face value of such issue, and the right to pay and retire in that manner shall be reserved and expressed upon the face of all bonds of each and every said issue, and the payment of the principal of each and every issue of said bonds shall be made in that manner.

It is the intention that the principal paying period of each issue of bonds shall not begin to run until the beginning of the twenty-sixth (26th) year from and after the date thereof.

5.—The above bonds to be sold by you at the New York Stock Exchange market rate for Chinese railroad securities for the time being, from which you shall be allowed and deducted a banker's or broker's commission of five (5) per centum of the par value of bonds for selling, which shall represent all expenses in connection with the issue of the said bonds such as underwriting, commission and brokerage, telegraph charges, advertising, postage, engraving, and printing of prospectus and bonds, stamp and legal fees.

6.—You shall have charge of and direct the work of locating, surveying, erecting water tanks and buildings of all kinds, constructing and equipping all railroads included in or contemplated by this contract, and also of buying the materials, rolling stock, machinery, tools, appliances, and equipment and furnishings therefor and installing the same. And you shall be paid for your services therefor a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroad, excepting purchases of land for any purpose, in each and every year from the time that this contract shall take effect, until the last of said bonds have been fully paid. The said railroads, and all construction, surveys, locations, equipment, materials, rolling stock, machinery, tools appliances, installations, commissions, wages, salaries, and everything whatsoever aforesaid, shall be paid from the proceeds of the sales of all of said bonds

and said proceeds shall not be used or applied to any other use or purpose nor shall any part or portion thereof; and it is expressly understood that the moneys derived from the sale of all of said bonds shall be deposited and kept in a responsible bank to be mutually designated and agreed upon by us in advance, and the same shall be drawn and paid out from said bank for the uses and purposes herein expressed, and for no other uses or purposes whatsoever.

In purchasing machinery and materials preference shall be given to those of American manufacture when price and quality are at least equal; but whenever it shall be possible to purchase suitable supplies and materials of Chinese manufacture, price and quality being at least equal, the same shall be given preference over those of American or other manufacture.

It is further agreed that the Ministry of Communications shall secure and purchase any and all lands required for rights of way and/or other purposes in connection with the terms of this Agreement, that such land purchased shall be paid for from the proceeds of the loan.

7.—To secure payment of all of said bonds, issued or to be issued, said Republic shall at the time that the first issue of said bonds shall be made, execute and deliver to you a first Trust Mortgage upon said entire railroads, built or to be built, together with all rolling stock, equipment, real estate, machinery, buildings, tools, and all of the physical property connected with or appurtenant thereto on hand or to be added, in accordance with the forms of the American Law which are customary and usual in such cases to secure payment of said first issue of bonds and of all issue of bonds subsequently issued. The Trustee to be selected and chosen by mutual agreement of the parties.

Until said Trust Mortgage shall be executed in form the provisions of this Agreement in respect of the mortgage are to be construed and treated as of the same purport and effect as a mortgage customarily executed and delivered in the United States to a Trustee, for the purpose of securing loans to and bonds issued upon railway properties. It is further agreed that if the financial markets in the United States or elsewhere require the execution of another deed or deeds or mortgage or mortgage at any time, for the better protection of the bonds, or require the appointment of another Trustee under the American Law, you shall discuss the same with the Minister of Communications, who will arrange the same as the exigencies of the case may require. The expense of the appointment of another Trustee in such case to be borne by you.

8.—The Executive Head of the railroads shall be a Chinese Director-General appointed by the Government, who shall be assisted by a Chief Engineer, who shall have charge of the Engineering Department; a Traffic Manager, who shall have charge of the Traffic and Operating Departments; and an Auditor, who shall have charge of all matters usually pertaining to that office, and each shall be qualified by practical experience, shall be of approved ability and integrity, shall be chosen, recommended and vouched for by you, and appointed by the Director-General if he shall approve of the character and qualifications of the person nominated; but if he shall not approve in any case, he shall call upon for another recommendation for the office. In event the Director-General shall consider any head of a department above-mentioned unfit to act, he shall upon consultation and mutual agreement with you cause his dismissal. It being understood that all of the above heads of departments shall at all times be men recommended by you. And if you shall subsequently discover that the standard of efficiency may be improved by substituting for any appointee another likewise recommended and vouched for, the incumbent shall be removed by the Director-General and the other substituted as above provided.

On or before the twenty-fifth (25th) day of each month you shall render a lump sum estimate to

the Director-General showing the funds required to meet the expenditures for the ensuing month, and upon the approval of the Director-General, he shall notify the Auditor who shall prepare and turn over to you a check for said amount in your favor.

It is agreed that requisitions for equipment and material shall be submitted to the Director-General for his information and approval.

It is agreed that all contracts contemplated to be let by you shall be approved by the Director-General.

It is agreed that any check of twenty-five thousand (\$25,000) dollars or more shall be countersigned by the Director-General.

It is agreed that any and all emergency expenses which pertain to the work contemplated by this Agreement, shall receive the approval of the Director-General.

It is further agreed that the rules of accounting shall be according to the rules prescribed by the Ministry of Communications.

9.—The salaries of all officers shall be fixed by mutual agreement between you and the Minister of Communications of China.

10.—Proper and correct books, showing all transactions of income and expenditures in detail and by items, shall always be kept, and both parties shall always have access to and inspection thereof.

11.—The time within which work shall commence under this contract, bonds issued and secured, and preliminary organization effected, shall be within six (6) months from and after the date of acceptance hereof unless prevented by extraordinary conditions.

12.—The said Republic shall assist you in every way possible in obtaining and acquiring all necessary rights of way, railroad yards, station grounds, sidings, gravel and sand pits, rock quarries, and other necessary concessions.

13.—All plans and estimates of construction shall be submitted to the Minister of Communications in advance for his information and approval, and said Republic may employ an Inspector or Inspectors to inspect all work as it progresses. And when the said railroads shall have been completed, you shall give notice thereof to the Minister of Communications in order that he may send his Inspector, or Inspectors, to decide whether the work has been done according to specifications.

14.—Your said proposal having been executed and submitted in both the Chinese and the English languages, each being a true and correct translation of the other and being executed in triplicate in each of the said languages, this acceptance thereof shall likewise be executed in the Chinese and English languages, each being a true and correct translation of the other in triplicate in each language. It is understood and agreed that in the event that difference of dispute shall at any time arise respecting the construction and meaning of either said proposal or this acceptance or any part of either, the English text shall prevail in determining each difference or dispute. One copy of the English and the Chinese text of this Agreement shall be held by the Ministry of Communications; one copy of the English and Chinese text by the Ministry of Foreign Affairs and one copy of the English and Chinese text by Siems and Carey.

15.—It is understood that your said proposal and this acceptance thereof, shall be construed together and as one instrument, and that all and singular the provisions thereof shall extend and apply not only to you, and the signers of the said proposition, but to you and each of your heirs, executors, administrators and assignees, who shall be of American nationality.

16.—The said proposal and this acceptance thereof are hereby made effective and binding upon the respective parties thereto, and the same shall be and continue in force from now henceforth according to the terms thereof.

17.—And it is further agreed that in the event that the parties hereto shall mutually decide that

further details are required to more fully and truly express the true intents and purpose thereof, this Agreement shall be reformed to include the same.

IN WITNESS WHEREOF, the Republic of China has caused this instrument to be signed and executed by its Ministry of Communications acting by its authority and on its behalf, this 17th day of the fifth (5th) month of the fifth (5th) year of the Republic of China: being the 17th day of May, 1916.

THE REPUBLIC OF CHINA,
By TSOAO JU-LIN,
Its Minister of Communications.

The above proposition is accepted by the undersigned in full and in detail:

SIEMS AND CAREY,
By W. F. CAREY.

ROY. S. ANDERSON.

Peking, May 17th, 1916.

Peking, May 17th, 1916.

Messrs. SIEMS AND CAREY,
Peking, China.

GENTLEMEN.—I have the honor to acknowledge receipt of your written communication, bearing date of this day, submitted by you as a supplement to be considered and construed to be a part of your proposition to the Republic of China, likewise dated on this day, respecting the building of steam railroads in said Republic, as fully to all intents and purposes as though set forth at length in your said original proposition.

We have given the same full consideration, and in behalf of said Republic of China, I, now in my capacity of Minister of Communications of the Republic of China and by authority and in behalf of said Republic, hereby accept the same and agree as follows:

In addition to the payment to you by said Republic of a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroads (excepting purchases of land for any purpose) in said proposition stipulated for your services therein mentioned, said Republic shall also pay to you a sum equal to eight (8) per centum of the aggregate amount of all other moneys expended for the construction of all of said railroads. As soon as any section thereof shall have been fully completed and put into commercial operation, then said eight (8) per centum shall cease upon such completed sections that are being commercially operated. Settlements and payments for both the five (5) per centum and the eight (8) per centum aforesaid, to be made at the end of each six (6) months from the date of the beginning of said work. And further, for handling and selling said bonds as in said proposition provided, as well as for the said services by you to be performed, twenty-five (25) per centum of the net profits derived from operating said railways, after paying all maintenance, operating and bond charges, shall be paid yearly to you at the end of each fiscal year up to the time of the payment of the last of said bonds, when all your rights shall cease and this contract shall terminate. By the term "bond charges" as above used, is meant the semi-annual interest on each issue of bonds during the first twenty-five (25) years from and after their date (during which time no payments of principal shall be made) and the semi-annual interest and four (4) per centum of the principal of each said issue to be paid in each and every year of the last twenty-five (25) years of the period for which said bonds are to run.

It is further understood that before any division of net profits shall be made in any year as herein

provided, there shall be reserved and set aside out of the said annual net profits, a sum equal to five (5) per centum of said annual net profits for a replacement fund, and a separate fund shall always be maintained for that purpose; it is understood, however, that if at any time said replacement fund shall have accumulated a sum in excess of the actual and reasonable requirements of said fund, such excess, by our mutual consent, shall be divided between us, you to receive twenty-five (25) per centum thereof as above provided.

It is further agreed that no commissions whatsoever shall be paid to you upon the salaries of any officer mentioned in this Agreement.

Respectfully yours,

REPUBLIC OF CHINA,
By TSOAO JU-LIN,
Its Minister of Communications.

COPY.

SIEMS-CAREY COMPANY, LTD.

Peking, May 17th, 1916.

To HIS EXCELLENCY,

Honorable Tsao Ju-lin,

Ministry of Communications of the Republic of China, Peking.

YOUR EXCELLENCY.—As a result of our negotiations respecting the matters embraced herein, we have the honor to submit to Your Excellency as the official representative of the Republic of China and for your formal acceptance in behalf of said Republic, the following proposition all of which has heretofore been verbally agreed upon between us, namely:

Clauses 1 to 13 inclusive are identical with similar clauses in the first letter of this series from the Minister of Communications to Messrs. Siems and Carey.

14.—The provisions hereof shall extend and apply to the said Republic, its successors and assignees, and to the undersigned and to their, and each of their, heirs, executors, administrators and assignees.

15.—This proposition shall become effective and binding upon the respective parties hereto upon acceptance hereof in writing by said Republic acting by and through its proper Ministry.

16.—And it is further agreed that in the event that the parties hereto shall mutually decide that further details are required to more fully and truly express the true intents and purpose hereof, this Agreement shall be reformed to include the same.

Respectfully,

SIEMS AND CAREY,
By W. F. CAREY.

(Sgd.) ROY S. ANDERSON.

Supplementary Agreement.

THIS SUPPLEMENTARY AGREEMENT is to be considered and construed to be a part of the proposition agreed to between the authorized representative of the Republic of China in the person of the Minister of Communications and Siems and Carey represented in the person of William Francis Carey, respecting the building of steam railroads in said Republic, bearing date on the day of the date hereof, as fully to all intents and purposes as though set forth at length therein, and is as follows:

It is mutually agreed that all interest charges to be paid during the construction of any specified line shall be paid for from the proceeds of the loan.

It is mutually agreed that there shall be paid no eight (8) per centum or five (5) per centum commissions upon the interest payments paid for out of the proceeds of the loan during the time of construction or at any other time.

It is mutually agreed that there shall be no commission charged upon the money expended for the purchase of land.

It is mutually agreed that inspection fees and incidental expenses connected with purchases which are not made upon the condition that such purchase shall be subject to inspection upon delivery in China shall be borne by Siems and Carey.

It is further agreed that in time of war in China said railroads and all employees thereof shall be subject to the rules of martial law, and that said railroads shall receive half rates for the transportation of troops, munitions of war, and all commissaries for war purposes.

It is further agreed that the railroads shall transport Government troops at half rates during times of peace or war.

IN WITNESS WHEREOF, the Republic of China has caused this instrument to be signed and executed by its Minister of Communications acting by its authority and in its behalf, this 17th day of the fifth month of the fifth year of the Republic of China, being the 17th day of May, 1916.

Signed:

REPUBLIC OF CHINA,
By TSOAO JU-LIN,
Its Minister of Communications.

SIEMS AND CAREY,
By W. F. CAREY.

ROY. S. ANDERSON.

Amendment to Compensation Proposal.

SIEMS-CAREY COMPANY, LTD.

Peking, May 17, 1916.

To HIS EXCELLENCY,

Honorable Tsao Ju-lin,

Ministry of Communications of the Republic of China, Peking.

YOUR EXCELLENCY.—As a supplement to be considered and construed to be a part of our proposition to the Republic of China, respecting the building of steam railroads in said Republic, bearing date on the day of the date hereof, as fully to all intents and purposes as though set forth at length therein, we have the honor to herewith submit the following as an amendment to paragraph numbered six (6) of said proposition relating to compensation, namely:

In addition to the payment to us by said Republic of a sum equal to five (5) per centum of the aggregate amount of all purchases made in behalf of said railroads (excepting purchases of land for any purpose) in said proposition stipulated for our services therein mentioned, said Republic shall also pay to us a sum equal to eight (8) per centum of the aggregate amount of all other moneys expended for the construction of all of said railroads. As soon as any section thereof shall have been fully completed and put into commercial operation, then said eight (8) per centum payments shall cease upon such completed sections that are being commercially operated. Settlements and payments for both the five (5) per centum and the eight (8) per centum aforesaid, to be made at the end of each six (6) months from the date of the beginning of said work. And further, for handling and selling said bonds as in said proposition provided, as well as for the said services by us to be performed, twenty-five (25) per

centum of the net profits derived from operating said railways, after paying all maintenance, operating and bond charges, shall be paid yearly to the undersigned at the end of each fiscal year up to the time of the payment of the last of said bonds, when all rights of the undersigned shall cease and this contract shall terminate. By the term "bond charges" as above used, is meant the semi-annual interest on each issue of bonds during the first twenty-five (25) years from and after their date (during which time no payments of principal shall be made) and the semi-annual interest and four (4) per centum of the principal of each said issue to be paid in each and every year of the last twenty-five (25) years of the period for which said bonds are to run.

It is further understood that before any division of net profits shall be made in any year as herein provided, there shall be reserved and set aside out of the said annual net profits, a sum equal to five (5) per centum of said annual net profits for a replacement fund, and a separate fund shall always be maintained for that purpose; it is understood, however, that if at any time said replacement fund shall have accumulated a sum in excess of the actual and reasonable requirements of said fund, such excess, by our mutual consent, shall be divided between us, you to receive twenty-five (25) per centum thereof as above provided.

It is further agreed that no commissions whatsoever shall be paid to you upon the salaries of any officer mentioned in this Agreement.

Respectfully yours,

(Sgd.) By W. F. CAREY.
SIEMS AND CAREY,

(Sgd.) ROY S. ANDERSON.

Supplementary Agreement Reducing Mileage and Operation Profits.

THIS SUPPLEMENTARY AGREEMENT is made according to Article Seventeen (17) of the original Agreement, signed May 17th, 1916, between the Government of the Republic of China, represented by its Minister of Communications, and Siems and Carey, represented by Mr. William F. Carey, and it is hereby agreed as follows:—

FIRST.

Article One (1) of said agreement which provides that fifteen hundred (1,500) miles of railway be constructed shall be amended so that wherever said mileage appears as fifteen hundred (1,500) miles, it shall be eleven hundred (1,100) miles.

SECOND.

In the second article of the supplement to said agreement addressed to the Minister of Communications of the Republic of China dated May 17th, 1916, and also in any other part of said agreement of its supplement where the per centum of the net profits derived from operation of said railways to be paid for handling bonds is fixed at twenty-five (25) per centum, the same shall be amended and reduced to twenty (20) per centum.

THIRD.

The first paragraph of Article Four (4) of the original agreement, shall be modified and reformed to read as follows:—

"So soon as the Government of the Republic of China and Siems and Carey, or their assigns, shall have determined any line that shall be first constructed, estimates of the cost of constructing and equipping such line shall be agreed upon between

them and the Government, and gold bonds of the amounts required by such estimates shall be issued. As soon as the authority to issue such bonds is given by the Government of the Republic of China, Siems and Carey, or other appointees or assigns, on behalf of and as agents for the Government of the Republic of China in this matter, shall issue such bonds as hereinafter provided, such issue to be either *en bloc* or in series as may be mutually agreed upon.

The same procedure shall be likewise followed as to the issuance of bonds to provide funds for the construction of all other lines which it shall be mutually determined to build. The Government of the Republic of China and Siems and Carey, or their appointees or assigns, as its agent, will at the time of the first issue and of every other issue, enter into such necessary further and supplementary stipulations and agreements regarding the character and issuance of such bonds and also the deposit and transfer of the loan proceeds as the exigencies of the financial situation may at the time require for the proper economical and successful flotation of the bonds.

Such bonds or other obligations hereinafter provided for shall be issued at such time, and in such amounts as will insure the continuous economical construction of the railways until the same are completed."

FOURTH.

To the Article numbered Five (5) of the original agreement shall be added the following amendments:

"The bonds provided for in Article numbered Four (4) hereof shall be issued by Siems and Carey, or their appointees or assigns, for and in behalf of, and as agent for the Government of the Republic of China at a price to be fixed by said agent upon consultation with the duly authorized representative of the Republic of China, and said Siems and Carey shall use their best efforts to have said bonds sold for the highest possible price.

When the construction and equipment of a line of railroad has been determined upon, and the estimates covering such construction and equipment have been agreed to as hereinbefore provided, said agent in consultation with the duly authorized representative of the Government of the Republic of China, shall decide what is the most favorable moment for the issue of the bonds, and the duly authorized representative of the Government of the Republic of China shall give the necessary instructions to the Chinese Minister in Washington. If at such time so determined the issue of such bonds on the terms named herein or agreed upon would be impossible, then in such case the Government of the Republic of China and said agent shall agree upon a mutually satisfactory plan of temporary financing through the issue of Chinese Government 5-year Treasury bills at the rate of interest and discount to be agreed upon. Such notes shall be repaid from the proceeds of the sale of bonds to be issued, when conditions for the sale of Chinese long-term obligations shall have sufficiently improved, such long-term obligation to be issued under an agreement to be negotiated at the time.

If, however, subsequent to an agreement having been reached, it issue bonds hereunder before the publication of the prospectus for such issue, or of any series thereof, any political or financial crisis should arise affecting the money markets or the prices of Chinese Government securities so as to render impossible, in the opinion of the agent, the successful issue of the bonds at the time upon, then the said agent upon consultation with the Chinese Government respecting the period of time, shall be granted a reasonable extension for the performance of its contract. If within the time limit to be arranged, the issue of Chinese bonds on the conditions herebefore set forth should be impossible, then the Government of the Republic of China and its said agent, shall agree on a mutually

satisfactory plan for temporary financing to provide as far as possible for the uninterrupted continuance of construction.

FIFTH.

After the first paragraph of Article numbered Eight (8) of the original agreement the following paragraph shall be inserted:

"Of the three (3) officers, the Engineer-in-Chief shall be appointed immediately, the Auditor as soon as required, and the Traffic Manager when required for operation. Their terms of office shall be during the life of the loans. With regard to the employment of all other officers, the number of them, the scale of their salaries, and the method of appointment, the Director-General or Managing-Director shall in consultation and mutual agreement with said three Heads of Department respectively decide upon a plan. Which plan shall be followed.

The Director-General or Managing-Director shall reserve the right to employ his own office staff."

SIXTH.

The Government of the Republic of China undertakes during the life of the bonds to be issued hereunder to treat the railways contemplated under this agreement in the same spirit of fairness in which all other Chinese Government Railways are treated.

SEVENTH.

All bonds and coupons and all payments made and received in connection with the service of any and all bonds issued hereunder, shall be exempt from all Chinese taxes and imposts of whatsoever nature during the life of said bonds or of any of them.

EIGHTH.

All of the uniform laws, by-laws, rules and regulations applicable to all Government railways in China promulgated by the Ministry of Communications, shall be observed by the railways built under this agreement.

NINTH.

The rights and duties of the Government of the Republic of China and of Siems & Carey, their appointees or assigns, shall be effective upon the day on which the agreement and all supplementary agreements are contracted and until complete redemption of all bonds.

TENTH.

After any line of railway has been agreed upon the survey thereof will be immediately made. All necessary expenses hereof will be paid out of the advancement already made. If after the survey is completed neither the bonds can be issued hereunder, nor funds for temporary financing according to this Supplemental Agreement are available within one (1) year, the contract may be cancelled. In that event said advancement shall be repaid with interest stipulated, unpaid up to that time, by the Government of the Republic of China, before cancellation thereof.

SIGNED AND SEALED at Peking by the contracting parties this twenty-ninth day of the ninth month of the fifth year of the Republic of China, being the twenty-ninth day of September, 1916, Western Calender.

THE GOVERNMENT OF THE REPUBLIC OF CHINA,

By Hsu SHIH-YING,
Its Minister of Communications.

SIEMS AND CAREY,
One of the Partners.

ROY S. ANDERSON.

By WILLIAM F. CAREY (Seal),

ENGINEERING, FINANCIAL, AND INDUSTRIAL NEWS

RAILWAYS

German Interests in Chinese Railways.—The Ministry of Communications has informed the Legations that the privileges of Germans in connection with the Hukuang Railway Loan Agreement were cancelled on the declaration of war. The payment of principal and interest on German bonds and advances ceased and they will be reckoned as security for the indemnity due to China for losses owing to the war. It is hoped that Great Britain, France and America will cooperate to the utmost of their ability to build the Hukuang lines.

It must be stipulated, however, that operations be limited to Great Britain, France and America and that German interests must not be revived after the conclusion of peace.

Proposals for Construction of Canton Tramways.

—The Canton Municipal Council has made two proposals for the construction of tramways. Under the first proposal the tramway company must pay the Council a gratuity of two million dollars and give the Council five hundred thousand dollars in shares. In return for this the Council will give the privilege of operating the tramways for twenty years, and will agree to buy over the system at the end of that time on terms mutually agreed upon, or in case of the Government's failure to redeem the plant the company would pay a percentage of its net profit to the government until redemption. Under the second proposal each of the parties would take half of the shares, the company would make a loan to the Council equivalent to half the shares, at 4 per cent. interest, and the company would pay a gratuity of a million dollars and a further loan of a million dollars at an agreed rate of interest. Under both proposals fares would be mutually agreed upon by the two parties.

New Locomotives for S.M.R.—The South Manchuria Railway recently put into service 17 Mikado type locomotives imported from America. In May eight more locomotives of the same type will arrive. A shipment of 26 more is expected in August, and in October six locomotives of the Pacific type, for passenger service, are looked for. At the same time four locomotives of the Consolidation type are under way at the railway's workshops at Shahokou.

Big Electric Car System.—Some Yokohama business men are promoting a scheme for building an electric railway line, apart from the already existing ones, to start from somewhere in Nihombashi-ku, Tokyo, and run underground along the outer moat, through Toranomon, out to Tengenji and Shibuya, where the line will come on the surface, cross the Rokugo River at the historical Yaguchi No Watashi, and continue to Yokohama to connect with the Yokohama city lines. The promoters are now trying to get the directors of the Yokohama electric car company interested in the scheme. This line is expected to parallel the Musashi Electric Railway, proposed by Mr. Jiyemu Okada, some years ago, so that the two interests may be amalgamated in order to hasten the work. The promoters' idea is that the

Yokohama city lines shall be made intermediary lines to connect the Tokyo-Yokohama line and the Shonan line, another proposed line to cover the peninsula of Sagami. The three lines, thus connected, will, it is expected, connect Tokyo, Yokohama and Yokosuka, and form a big railway system. The capital proposed is to be Y.20,000,000.

S.M.R. Co.'s Estimates for 1919.—The S.M.R. Co.'s Estimates for the current fiscal year of 1919 have already been passed by the Colonial Board and the Department of Finance and are now awaiting the Premier's sanction, which is expected in a day or so. At the same time, the call of Y.6,000,000 on the Second Issue of the Company's 400,000 shares on June 1st next and also of Y.4,000,000 of the Third Issue of the Company's 200,000 shares has been sanctioned. As to the Company's debentures, negotiations will be held with the Department of Finance since the matter will naturally affect the Government loans to be issued in Japan. The aggregate amount of the Company's Estimates for the current fiscal year is more than Y.69,000,000, including Y.30,000,000 for the railways (of which Y.20,000,000 is for the construction of 1,000 goods cars, 40 locomotives, and dozens of passenger cars, and Y.1,200,000 is for the double-tracking of a section north of Mukden), Y.17,000,000 for the Anshan Steel Works, Y.420,000 for the Third Wharf, Dairen, now in course of construction, Y.700,000, half the cost of reconstructing the quay wall of Dairen Harbor, etc.

Tokyo Tramways.—Receipts in March were Y.14,540,371, as compared with Y.12,807,549 in March of last year and Y.10,738,358 in the same month of 1917.

Japanese Railway Receipts.—The total receipts of the Railway Board of Japan during the fiscal year 1918 ending in March last amounted to Y.121,898,153 from passengers and Y.107,369,255 from freights making a total of Y.229,267,408. These figures represent an increase of Y.35,894,806 in the income from passenger and of Y.20,531,408 in that from freights.

S.-N. Railway Plans Improvements.—Contemplated improvements on the Shanghai-Nanking Railway would involve an expenditure of something like a million dollars, about half of which would be available from net profits of the line while the rest would be raised by an issue of debentures. The line has been handicapped by the lack of freight cars, and also by the ferry system between Pukow and Nanking, and improvements would undoubtedly begin on these two difficulties.

Shanghai Tramways.—The effective receipts of the Shanghai Tramways in March amounted to Mex. \$123,847.08 as against \$105,787.13 in March, 1918. Recently weekly figures were as follows :

| Week Ending : | Effective Receipts. | Passengers Carried. |
|---------------|---------------------|---------------------|
| April 2 | \$28,872.29 | 1,745,370 |
| April 9 | 29,893.82 | 1,803,391 |
| April 16 | 28,862.02 | 1,725,810 |
| April 23 | 27,892.57 | 1,688,117 |

MINING

Sungei Gau Tin Mining Co.—The 1918 workings resulted in a profit of Straits \$42,632, to which a balance brought forward added Straits \$1,703, an interim dividend of 10 per cent. absorbing Straits \$15,000, leaving Straits \$29,336. A final dividend of 10 per cent., making the total dividend 20 per cent., has been declared, leaving Straits \$14,336 to be carried over. The total output amounted to 1,747 piculs, of which 1,375 piculs were obtained from the battery and 372 piculs from tributaries, the total being less than that of the preceding year by 911 piculs. The average price obtained for ore during the year amounted to Straits \$85.22 compared to Straits \$62.50 in the preceding year.

Chinese Invents New Processes.—Chung Yu Wang, of Hankow, has applied for a patent on an invention the object of which is to produce a slag which does not contain any antimony compound. Another object is to utilize a by-product of the refining of antimony, which is at present discarded as useless. The mixture is composed of iron sulphide resulting from the precipitation process of antimony smelting, and an alkali metal carbonate.

Kiangsi Iron Mines.—The news that the Ministry of Agriculture and Commerce has granted permission to a Chinese syndicate for the operation of the Chengmenshan iron mines at Kiukiang, Kiangsi Province, has aroused a storm of protest from the provincial assembly, as it is suspected that the syndicate is capitalized with Japanese funds.

Seoul Mining Company.—During the month of March, the mills on the Suan Concession treated a total of 18,200 tons of ore for a gross production of Y.177,343.02. The Suan mill was again in full operation on Suan ore and will continue so through the summer.

Kailan Mining Administration.—Recent weekly records of production and sales of the Administration's mines have been as follows :

| Week Ending : | Output : (tons) | Sales : (tons) |
|---------------|--------------------|-------------------|
| March 22 | 73,880 | 71,756 |
| March 29 | 78,414 | 51,045 |
| April 5 | 77,320 | 71,518 |
| April 12 | 76,832 | 60,935 |

INDUSTRIES

Needle Factory for Shanghai.—A Chinese businessman, Mr. Koo Tseng-hui, formerly of Osaka, has established a factory known as the Hua Fung Needle Company on Ward Road, Shanghai, for the manufacture of sewing needles. The needle business in China was formerly in the hands of German traders, passed over to Japan with the war, and is now being divided among other countries.

Waterworks for Wuchow.—A waterworks company is being organized at Wuchow, Kwangsi Province, with a capital of \$300,000. The company will be controlled by the local government.

Shanghai Waterworks Dividend.—At a meeting in March, a further dividend of 6½ per cent. plus a bonus of 2/6 per £20 share was declared on 1918 workings, in addition to the interim dividend of 5 per cent. paid in the summer.

Hydro-Electric Plant for Formosa.—The Formosa Government has decided upon the construction of a hydro-electric plant, a capital of thirty million yen being necessary for the project.

Soap Factory in Siberia.—A soap factory is under construction at Irkoutsk, by the Mongolian Food Expedition, which will be ready to start work this Spring.

New Industries at Antung.—Okura & Co. are planning the establishment of a paper mill at Antung with a capital of five million yen. The company would utilize Yalu timber for pulp. The Manchuria Blasting Powder Co. is planning the construction of a factory with a capital of one million yen.

Japanese Fisheries Industry.—The output of Japanese tinned salmon in 1918 was some 400,000 cases, nearly all of which was consumed in England and France. The 1919 output is estimated at 520,000 cases. Part of the large herring catch, which is now consumed locally, is to be smoked and exported, now that the Government Bureau in charge of fisheries has pointed the way with experimental shipments to America which met with ready sale.

Sugar Profits in Formosa.—The Ensuiko Sugar Refinery has paid a dividend of 20 per cent. on 1918 workings, accounting for Y.1,125,000 of earnings aggregating Y.3,329,405. The Niitaka Sugar Refinery has paid 22 per cent., accounting for Y.825,000 of profits aggregating Y.1,011,920.

Canton Cement Works in Private Hands.—The Canton Government has asked the merchants to take over the government cement works at Tai Sha Tau, as it is unable to meet a mortgage for three million yen held by the Bank of Taiwan. The factory is now turning out 400 barrels of cement daily, the plant having a capacity of 500 barrels. Under government management the plant has not been a success.

Wuchang Cotton Mill.—A large spinning and weaving mill is under construction at Wuchang, one of the cities in the Hankow group. The completed mill will operate over a thousand weaving machines and over 40,000 spindles. The buildings and equipment are of the latest type. Over 2,000 hands will be required when the mill is in operation.

Electric Plant at Kanchow.—An electric light plant has been installed at Kanchow, Kiangsi Province, the source of power being a gas engine using charcoal, which was manufactured in Hongkong.

Copper Mill at Canton.—The Tai Sing Copper Mill will soon erect a modern plant for the manufacture of copper sheets at Honam, a suburb of Canton. For two years the mill has been working with a small output, which will be doubled by the construction of the new plant.

FINANCIAL

Bank of Communications to Pay 14 per cent.—At the annual meeting of Bank of Communications shareholders at Peking on May 25 a dividend of 14 per cent. will be declared. The total net profit of the Bank in the past year was more than

\$4,000,000 Mexican. The Shanghai branch of the Bank is planning to move into the former German bank, on the Bund.

Exchange Bank of China Pays Ten Per Cent.—According to the first report of the Exchange Bank of China, for the year ending December 31, 1918, the net profit was Y.1,240,186.54, from which a dividend of 10 per cent. has been declared.

New Capital in Philippines Sugar Industry.—Three of the most prominent sugar men of Hawaii are now in Manila with a plan for making the Philippines one of the world's greatest sugar producing centres by means of modern scientific methods. The capitalists are ready to invest twenty million pesos in the business, and propose to immediately put four million pesos in sugar on the island of Negros. A group of Filipino capitalists are also interested, and have formed a million pesos syndicate for investment in a sugar central in Negros.

Huai Conservancy Scheme Before Cabinet.—The Peking Cabinet has begun a discussion on the suggestion of the Huai River Conservancy for a loan of forty-five millions and the employment of 50,000 disbanded soldiers for a program of conservancy work on the Huai, Chiao, Sze and Hsi rivers over a period of nine years, in Kiangsu, Shantung, Honan and Anhui provinces.

SHIPBUILDING

French Take Over Chinese Shipyard.—Three French engineers have arrived in Shanghai to superintend operations at the yards of Nicholas Tsu, in which French capital now holds large interests.

Yarrow Favors Ship Construction at Vancouver.—Yarrow & Co., the well-known shipbuilders, have announced their intention of gradually diminishing the output of their works at Scotstoun on the Clyde and of increasing their production at their similar but smaller works at Vancouver. The Yarrow works were moved from the Thames at Poplar to the Clyde some 13 years ago.

Native Shipbuilder Launches Vessel.—The Kwong Cheung Hing yard, Hongkong, has launched the s.s. *Kam Ying Fat*, a vessel 195-ft. in length, 25½-ft. in breadth, fitted with two boilers and two sets of compound engines giving a speed of about 10½ knots, for the Globe Navigation Co., of Hongkong. The vessel has a cargo-carrying capacity of 900 tons.

T.K.K. to Build Two Liners.—The Toyo Kisen Kaisha has decided to construct two large passenger liners of 26,428 tons each, with elaborate provisions for passengers, for the San Francisco-Orient run. The vessels would make the run from San Francisco to Yokohama in eleven instead of the sixteen days now required by the fastest vessels on the run.

Shipbuilding at Hongkong.—The *St. Day*, one of the two "rescue tugs" built by the Taikoo Dock, Hongkong, for the Admiralty, ran her trial trip on March 22, when she developed over 1,300 horse-power at an average speed of 12½ knots. She is about 170-ft. long. The Taikoo Dock has just

completed another "rescue tug," which ran her trials on April 1. Four other "rescue tugs," of similar dimensions, are being built at the Kowloon Docks and the Cosmopolitan Docks at Yaumati, while Messrs. Bailey & Co. are building two small ones, of 750 horse-power. Over 300 "rescue tugs" were built at Home during the last two years of war. Their purpose is to attend on destroyer flotillas, and rescue (by towing) any destroyers which strike a mine or are otherwise disabled.

Shanghai Launching.—On April 17 the s.s. *Riviera* was launched at the yard of the Shanghai Dock and Engineering Co. She is of the Friederikstadt type of Norwegian standard ship, her loaded displacement being 5,000 tons. Triple-expansion engines of 1,600 i.h.p. will drive the vessel at 10-11 knots. In length she is 277, in moulded breadth 24, and in moulded depth 20 feet.

Big Vessel Launched in Hongkong.—The s.s. *War Sniper*, an 8,000-ton standard vessel of "B" class built to the order of the Controller of Shipping, London, and to Lloyd's highest class 100 A1 under special survey of its local representative, was launched by the Hongkong and Whampoa Dock Company in March. Her length overall is 412-ft., length between perpendiculars 400-ft., breadth moulded 52-ft., and depth moulded 31-ft.

Norwegian Vessel Launched at Shanghai.—The launch of the s.s. *Marita* took place at the Shanghai Dock and Engineering Co.'s Pootung dockyard on April 2. She is of the Friederikstadt type of Norwegian standard ship, with a carrying capacity of 3,100 tons, a speed of 10-11 knots at 1,600 i.h.p., 277-ft. in length, 42-ft. in moulded breadth, and 20-ft. in moulded depth.

N.Y.K. Constructing Ships.—The Nippon Yusen Kaisha has permission from the British Government to import about 10,000 tons of steel for the construction of three large freight steamers of 10,000 tons, two of which have been ordered from the Yokohama Dockyard and one from the Mitsubishi.

SHIPPING

C.P.R. Liner as Troopship.—The hospital ship *Loyalty*, formerly the well-known C.P.R. s.s. *Empress of India*, has been converted in Bombay into a troopship. The total cost of buying and fitting out the ship was nearly half a million sterling, of which by far the greater part was paid by the Maharajah of Gwalior.

Wooden Ship Problem in Japan.—Wooden-ship owners in Japan have brought forward a proposal for the amalgamation of their interests, by which a corporation will be formed for taking over from 40,000 to 100,000 tons of wooden vessels. The price paid would be Y.200 per ton deadweight, of which Y.50 would be paid in cash and the remainder by the shares of the proposed company. Many wooden vessels are tied up in idleness, and owing to their defective condition insurance companies do not accept risks on such craft.

Admiral Line on the Pacific.—The Admiral Line is now operating six large steamers in the Trans-Pacific trade for the U.S. Shipping Board, in addition to seven of its own vessels in this service.

Motor-Ships in Oriental Run.—Two big motor-ships, the *Peru* and the *Panama*, will be put on the Pacific by the Danish East Asiatic Company, who propose later to add to the same run some of the 12,000-ton motor-ships now building in Denmark.

Chinese Shipping Line's Dividend.—The Ningshao Steam Navigation Co. has declared a dividend of 7 per cent. and a bonus of 5 per cent., accounting for \$126,000 of the net balance of \$343,970 from operations in 1918.

Japanese Lines in Scandinavia Service.—It is reported that the Nippon Yusen Kaisha proposes to operate a direct service between Scandinavia and the Far East.

Passenger Ships for Dollar Line.—Plans have been prepared for the construction of ten passenger and freight steamers, for the Robert Dollar Co., to run on regular schedule between Shanghai, Hongkong, Manila and Singapore. The ships will be of 12,000 tons with facilities for 100 passengers.

Chinese Gunboat for Commercial Purposes.—A party of merchants has applied to the Kwangtung Government for the lease of the gunboat *Kwang Hai*, which is lying idle at Canton. The boat was sold last year at auction, but the purchaser failed to complete payment.

Shipping Tolls Collected by Southern Government.—The Shipping Office in Canton, in a report to the Kwangtung Bureau of Finance, states that the Government, during a year, is able to collect \$116,180 on shipping permits and licenses from passenger and freight junks; \$10,800 from steam launches; \$13,912 from inspection fees of steamers and launches and \$47,100 from other boat licenses.

Big Japanese Shipping Line.—The Kawasaki Kisen Kaisha has finally been established in Japan with a paid-up capital of Y.20,000,000, and will soon establish lines to Calcutta and America, beginning with eleven ships.

O.S.K. Enlarging Fleet.—The Osaka Shosen Kaisha will shortly have four new steamers in service, two of which are of 4,200 tons, and will be put into service on the Keelung-Singapore line and the European line, and two others of 8,000 tons which are yet under construction.

China Merchants' Profit.—The directors' report and statement of accounts of the China Merchants S.N. Co. for the 45th working year states:—

The total receipts during the year amounted to over Tls. 6,887,000 and the proportionate share received from the pool account of the three shipping companies (the C.M.S.N. Co., the Indo-China Co. and the China Navigation Co.) amounted to over Tls. 141,000. Compared with the result of the previous year, the receipts show an increase of over Tls. 1,490,000, mainly attributable to the effect of the European war. But the expenditure also showed a tremendous increase. After deducting expenses, repairs, insurances, etc., amounting to over Tls. 3,506,000, there remains over Tls. 3,523,000. From godowns and house property, over 392,000 was received. Land rent, repairs, interest and bonuses absorbed in all over Tls. 2,122,000. The net balance on the credit side is, therefore, over Tls. 1,793,000, from which the Directors recommend a dividend of Tls. 14.25 per shipping share and Tls. 3.50 per house property share, to be paid to shareholders in the proportion of two shipping shares and one house property share, that is, Tls. 32 in all.

Homeward Freight Conference Rate.—The homeward freight conference rate has been reduced from April 7 to the basis of the new minimum rate of 100/- per ton.

Consolidation of Shipping Agencies in Shanghai.—On April 1 Messrs. Mackinnon, Mackenzie & Co., General Managers of the British India S.N. Co., took over the offices and management of the P. & O. S. N. Co. and the management of the British India and Appear Lines from Messrs. Jardine, Matheson & Co. and Messrs. David Sassoon & Co., the former agents.

Japanese Charter Rates.—The Osaka Shosen Kaisha has chartered from the Kawasaki Dockyard the s.s. *Vancouver Maru*, 8,100 tons, for a single voyage to London at Y.12 per ton.

Big Ship Calls at Colombo.—The White Star s.s. *Ceramic* which arrived at Colombo recently on her way to Australia with troops, is the biggest ship that has entered the harbor. She is 18,481 tons gross; the biggest vessel to enter the harbor before was the Hamburg-Amerika s.s. *Cleveland* of 16,690 tons.

New Pacific Freight Rates.—The rate on general cargo from the Orient to the United States was reduced on April 17 from G.\$20 to G.\$15 per ton, with a few modifications. At present little cargo is offering. The Japan-Java freight rate is now Y.16 (G.\$8) per ton.

CONSTRUCTION

Kailan Mining Administration Building.—The Kailan Mining Administration proposes to erect a new head office building at Tientsin, and has advertised for competitive designs, offering a second prize of two thousand dollars and a third prize of one thousand dollars.

Department Store to Open in Peking.—Whiteaway, Laidlaw & Co. have definitely decided to open a store in Peking, and plans for their building have been approved.

Bean Oil Tanks for Dairen.—Construction is under way on seven bean-oil tanks at Dairen for the Mitsui Bussan Kaisha, with a total capacity of 6,750 tons, which will be connected to the wharves by pipes. To prevent freezing in winter a steam-heating arrangement is provided.

Japan Enlarging Mint.—The Japanese Mint is to be enlarged, an appropriation of Y.1,110,000 over a period of three years having been made for the purpose.

Building Boom in Manila.—Plans are under way for the construction of buildings on Rizal Avenue aggregating three million pesos in value.

Big Hotel for Shanghai.—The Shanghai Hotels Company will erect a 9-story modern hotel of 500 rooms, at a cost of a million taels, on ground opposite the Race Course on Bubbling Well Road which was purchased from Mr. E. S. Kadoorie. The property extends from the Horse Bazaar to the Metropole Hotel, a frontage of 330-ft., and extends to a depth of 331ft. on Burkhill Road. A theatre, a ballroom, and a verandah overlooking the race course will be features of the new structure.

MISCELLANEOUS

Machinery Trade in the Far East.—Large importations of machinery are expected from

America and Britain with the modification of the export embargoes of those countries. Shortage of stocks and the high prices of locally made machinery will bring about a large business within the next few months.

Chinese Department Stores Prospering.—The Sincere Company, who have three large department stores in Canton, and one each in Hongkong and Shanghai, are reported to have transacted business aggregating four million dollars in 1918 with a capital of seven million dollars. In addition to paying ten per cent. interest on invested capital, shareholders will receive 6½ per cent. on shares in the Hongkong business, 6 per cent. on shares in the Canton business, and 2 per cent. on the shares of the newly established Shanghai house.

Japanese Steel Prices.—The Yawata State Steel Works has announced the following rates on its products, for harbor delivery: Rod, Y.200; bar, Y.230; thin plate, Y.280; thick plate, Y.375; angle, Y.200; galvanized plate, Y.400; and cast iron Y.265 per French ton.

Returning Chinese Coolies.—Some 600 Shanghai coolies who had seen service in Mesopotamia and East Africa were returned by the Indo-China s.s. *Namsang*, after having been met at Singapore by an armed guard who relieved them of a quantity of opium and other articles stolen from the vessel which carried them to that stage of their journey.

Disposition of Enemy Naval Vessels.—The Chief of the Chinese Admiralty has asked that the sequestered enemy ships should be turned over to the Ministry of the Navy, in view of the shortage of men-of-war.

Daylight Saving in Shanghai.—By common consent the local time of Shanghai was put forward one hour in advance of China Coast zone time, on April 12, as a means of saving daylight in the summer. The railroads and shipping services continue to use zone time.

Opening of Shanghai-Woosung Highway.—The official opening of the road which has been built by the Chinese Government connecting Shanghai with Woosung, the settlement at the mouth of the Whangpoo some 14 miles below the city, will take place on May 4.

Nickel Coin for Kwangtung.—The Kwangtung Government has issued 400,000 coins representing five Mexican cents, said to contain 75 per cent. of copper and 25 per cent. of nickel.

Peking Population Nearly Million.—The annual census of Peking which has just been made by the police reveals that there are in Peking 932,540 inhabitants, of whom 637,681 are males and 294,859 females. The number of families is given at 172,312.

Big Shell Exports From Philippines.—Exports from the Philippines of shells, comprising six kinds of commercial value: the gold lip or mother-of-pearl, the trochus, the green snail, the black lip pearl, the window shell and the tortoise shell, amounted in 1918 to 570,308 pesos.

Taxicabs for Singapore.—The prospectus has been issued of the Singapore Taxicab and Transport Co., who propose having a fleet of 40 Ford taxicabs and five motor trucks for service in Singapore.